COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

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When and Where to Apply Self-Restraint

WHAT a lesson the public is teaching itself on coal! A most remarkable demonstration of the great axiom that the destiny of the coal trade is in the hands of the consumer is being staged. There have been buyers' strikes on coal before but never under the conditions of today. Previous general withdrawals of consumers from the market, to the discomfiture of the coal producer, have always had a background of large stocks and were explainable as the normal result of falling prices on an overstocked market. They have always gone too far, it is true, and reacted in the end to the disadvantage of the buyer. Hitherto these long sweeps have had no guidance; they have simply been the expression of uninformed mass psychology.

Six years ago this week the country awoke to the realization that consumers' stocks were low, consumption was increasing and that a nationwide car shortage had developed. Prices at once reacted to new high levels. The coal shortage then begun lasted until the armistice. Conditions with respect to stocks, consumption and car supply are essentially the same today as in the autumn of 1916. The differences are only in degree; the relative positions are the same. Yet the price is falling.

The United States Chamber of Commerce has just completed a survey of the country and reports that although reserves of soft coal are "less than normally carried," the bituminous-coal situation "is becoming easier" and that there is no "general complaint as to price." Production of bituminous coal is no more than sufficient for current consumption and permits no stocking. "It should be borne in mind, however," says the Chamber, "that this is an average figure [of stocks] of small plants and large plants, and covers stocks varying from a few days' to two or three months' and in some instances even longer."

The self-restraint of the buyer is being intelligently directed. The mine price of soft coal is even yet high enough to call forth all the production the railroads can carry. The buyers are taking all the coal they can possibly get, but they are buying it without panic. From the standpoint of supply and requirements—as contrasted with demand—this is a sellers' market. Yet the buyer is so largely in control that he is really making the price on a large part of the output.

In 1919 the positions were reversed. The country was overstocked with coal, consumption was falling sharply. The coal producers, fresh from the lessons of the war, having been forced by the Fuel Administration to learn their costs, refused to be stampeded into price cutting. It was a buyers' market in the summer of 1919, if ever there was one, but the price was maintained by the self-restraint of the seller.

If it be granted that steady prices and absence of violent fluctuations in the market make for stabilization of the coal industry, then the obvious conclusion is that self-restraint should be preached to and practiced by the side that will be benefited thereby. Teach the public its responsibility in a two-sided game, as well as the coal operator. It is easier and more sensible to drive home to the buyer his selfish interest in not going wild and paying prices for coal that cannot encourage production and thus to prevent high-price scandals, and to give the operator the right and opportunity to protect himself against the ruinous low prices that obtain at other times, than to campaign against the natural and human instinct of the buyer to beat the price to the lowest level irrespective of consequences, or of the producer to refuse to take a handsome profit when it is offered to him.

The present concerted restraint of the coal buyer is not an accident. It is the result of broad national planning, conceived in advance of the fact. It exhibits a phase of the national coal situation that we trust will not be overlooked by the Federal Coal Commission in its study. It is true that the chapter is but opening, that the experiment may fail, but it is certain that future chroniclers of the coal question will look back on the buyers' strike of 1922 as a well-conceived stroke of national policy, carefully executed, and that credit for its conception and execution will be placed where it belongs.

Solving Hard Coal's Commercial Problem

COMMERCIAL production of large sizes of anthracite, including pea, averages around 50,000,000 gross tons per year. Of this, in normal years, the railroads take about 2,500,000 tons; gas plants, 700,000 tons, mainly the egg and broken sizes, and industrials, some 1,800,000 tons, a total of 5,000,000 tons, or about 10 per cent of the prepared sizes. This represents a substantial and desirable trade.

It was generally recognized during the war that household use should have preference in distribution of the larger sizes and the allotments of the Fuel Administration to other than domestic consumers were cut as much as possible. The allowance for railroad use, for instance, was but half the normal taken for that purpose. Somewhat the same situation has arisen this autumn. With retail distribution of the favored sizes largely on a hand-to-mouth basis and consumers' reserves at a low point, hard-coal shippers are holding back other consumers and discriminating in favor of the small user.

A small industrial consumer of egg coal recently called on the president of an anthracite producing company to inquire as to the prospect of getting 250 tons, his winter's requirements. He was told that he had not the slightest chance, that he was "out of luck," that in fact he "had his nerve" to come in and raise the question. The buyer mildly stated that he well knew that he was a "non-essential" but that during the war

he managed to get his coal and wondered whether matters were now so bad that he could get none.

He was not only given no encouragement but was sent away with the feeling that there was no hope for him in the future. He at once set about installing oil-burning equipment in his plant. Thus a small piece of hard-coal trade was lost. There was no effort to convert him to the use of sizes smaller than pea, although at that moment the steam sizes were in oversupply. This coal-company official might have taken an interest in the fuel problem of this anthracite consumer, called in his engineer—if by chance he has one—looked over the plant, advised on proper equipment for utilizing junior sizes and thus saved an outlet for a part of his product that even in the best times is difficult to move.

Attention to small details is the foundation of successful enterprise. If this incident, involving one of the largest anthracite producing companies and one of the smallest consumers, is typical, and it seems almost to be, then progress in solving the real commercial problem in hard coal—the steam sizes—is certain to be slow.

Today and Yesterday

NEW occasions bring new duties, and the mining engineer should be as cognizant of this as anyone. A great change has come over the mining industry in recent years. A few years ago the need for exploration dominated every other need. Every mining man in the coal regions of Pennsylvania and later of West Virginia and Kentucky was a geologist, and the residents of those sections were hardly, if at all, behind. Every farmer had coal land to sell, every lawyer and real estate man (they did not then term them realtors) had coal land to lease or dispose of, and every merchant had in mind taking options on coal land or already had it cornered and for sale. The mining engineer's intensive study of geology, consequently, not only solved everyday problems but gave him a standing in the community that he could capitalize.

The day of exploration is largely past. A little of the earlier interest and need for coal geology remains and will always remain. There are still outcrops to be traced and drillholes to be bored; there are still a few unexplored areas in the more important fields; there are still possible extensions of old fields; there are wants and faults, but these matters do not stand where they once did as the leading problems of the engineer. It is a day not so much of exploration of doubtful, as of development of known, deposits.

In mining today we are no longer satisfied to use the natural forces of nature unaided by mechanical appliances. The study of mechanical engineering therefore is the greatest need of the mining man. He no longer can satisfy himself with geodetics, with the geology of the coal measures, the chemistry of mine gases, the physics of air and heat, as was once his wont. He has now to delve and delve deeply into electricity; he has to attain a mechanical mind. He cannot safely let the industry move away from him.

For a while he may be able to regard his mechanical brother as a man in an inferior branch of the service and "make away with it." Or again, for a season he can hide his ignorance of electricity by relying on the advice and plans of the salesman of an electrical house. But let him not deceive himself; he cannot do it forever.

Let him study now when he has the opportunity; let him ask questions today, when ignorance of electrical lore is still regarded with tolerance; let him gain experience while the chance offers, or the time will come when so much has to be learned that a busy man cannot hope to acquire it and when his mind, no longer as retentive and flexible as in early years, will fail to grasp what is presented to it. The coming executive is going to be well booked on electrical methods. Are you hoping to become an executive or are you expecting to continue in that position? You cannot do it if indifference to such matters prevents you from studying electrical methods.

How Nicely They Do It

A PAPER from DuBois, Pa., contains the heading "Road Work Suffers as Back-to-Mine Move Grows" and describes how the men are leaving their labor on the high roads to work at the mines. The road contractors, if they ever give a passing thought to the irregular way in which their industry functions, need not worry about their men being idle in the winter. The mines will take care of them at good pay, which is about three times as large as the contractors on road work are offering.

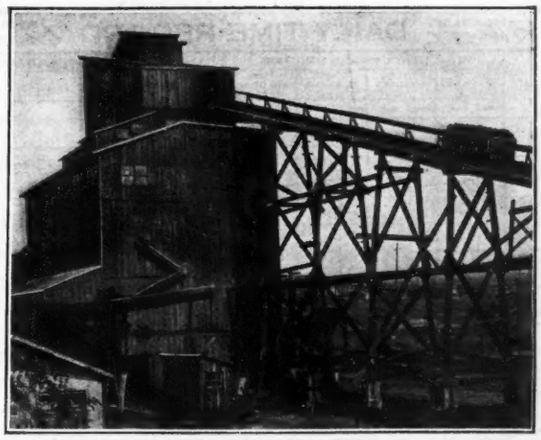
The reason why the employees of road contractors do not have an idle season is that they are willing to work at low wages and so can readily drift from one kind of a job to another. If the coal mines paid $2.80 a day to their men they would be deserted in slack periods, and the miner, finding work elsewhere, would make no complaint about the layoff. But because he gets about $8 a day he can find no place to go where he can do as well. He is therefore disposed to stay, working part time at the larger sum and making as much as if he worked steadily at the smaller. Thus he continues his residence around the mines and finds fault with the operator if for several days each week the working whistle is not blown.

If wages dropped at mine workings to $2.80 per day the last would be heard about the overmanning of the industry. Why is it overmanned? Because it pays best, because it is desirable work—cool in summer, warm in winter—also because, unlike most rough work, it is reasonably steady. Most roustabouts have to spend several evenings each month hunting for jobs. They are laid off for every rain and sometimes do not have a chance to return to work till the roads dry. They do well to average an even 200 days a year and then only by eternal watchfulness for odd jobs.

The mine appears to them to be a good opportunity for reasonably steady labor at a high rate. With the present pay the men cannot be driven away from the mines, but should it fall to road-making levels it would be easy enough to wash one's hands of one's men. They would be gone within a day after the work stopped, for then any other job would be at least as remunerative even if not as reliable or as easy as coal mining. The mine workers are always protesting to the public of their hardships, their great hardships—low pay, bad working conditions, irregular work, powder charges, house rent, doctor and hospital check-offs—but the overmanning of the industry proves that they stay, that once they have joined the coal-digging confraternity they will not leave the mines. By this sign they surely make a more conclusive answer to their allegations than anything the operators can say.

Detection of Waste of Time And Current at An Anthracite Colliery

BY D. C. ASHMEAD*
Kingston, Pa.



Few Know Just How Many Hours Their Breaker or Tipple Runs—John Conlon Colliery Measures Idle Time with a Recorder—Also Checks Current Used by Hoists—Care in Detecting Grounds

NEAR the city of Wilkes-Barre is the independent colliery of John Conlon with an output of about 300 tons a day. It is supervised directly by members of the Conlon family with a supervision probably more careful and competent than is customary with a mine of such an output.

The Conlons have long recognized that one of the greatest sources of loss in operation arises from broken time during working hours. Delays in one section of the operation often tie up the whole plant, for nearly all the plant operations are dependent, not only ultimately but almost immediately, on one another. Without storage provision division of labor inevitably produces great loss of time and in mining operations each department must do its work with unerring schedule or almost all other departments will be obliged to wait for the slow department to come up to the mark, thus entailing considerable monetary loss.

Frequently the length of time wasted is far greater than is recognized. Delays are vexatious and we rather like to minimize them when estimating their importance. Because their length is rarely a matter of record, few steps are taken to reduce their number and duration. Hoists are not used to their full capacity, locomotives stand idle, breakers fail to operate. Everywhere are men and machinery on the job yet without doing work of value, adding to the payroll but not to the product.

To detect the wasted time in their collieries the Conlons purchased a number of Servis Recorders. The interior of one of these simple recorders is shown in Fig. 2. The recorder consists in part of a clock to which is attached a recording chart. This paper is graduated to show 10-minute periods. In the other half of the recorder is a pendulum to which a pencil is attached. The recorder is hung vertically, so that the

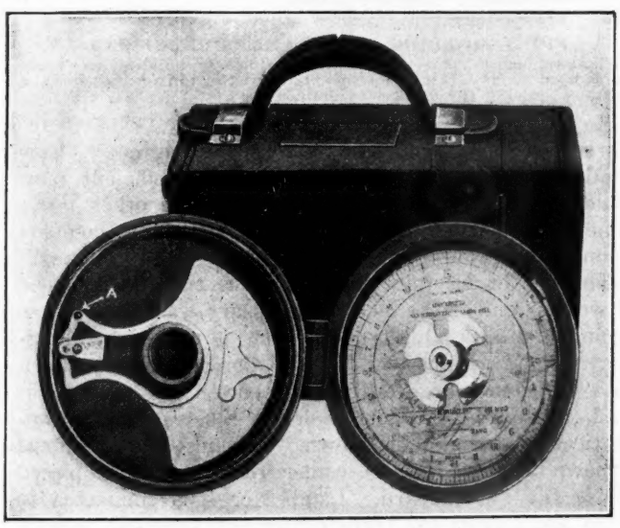


FIG. 1—RECORDER NOTES WHEN PLANT WORKS

Illustration is of interior of instrument. The right half is a paper chart which is revolved by clockwork. It rotates once in 24 hours. On the left is a pendulum in the form of a half disk and shown turned on one side. When the recorder is properly hung the pendulum swings with the vibration of the breaker or mechanism to which it is attached. A pencil, *A*, makes a mark on the chart whenever vibrations are to be recorded.

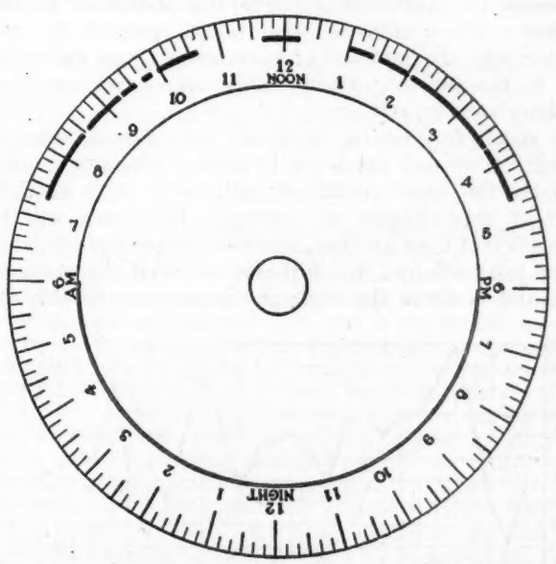


FIG. 2—CHART SHOWING WHEN BREAKER WORKED

From this chart the actual time of any delay and its length can be ascertained. When inquiries are to be made into reasons for idleness, the story is already half told. Often when the time is known the reason can be found and the cause eliminated. When suggests why, and why explains how the trouble can be avoided.

*Anthracite Field Editor, *Coal Age*.

NOTE—Headpiece shows the John Conlon Colliery, near Wilkes-Barre, Pa. This is a long established, independent operation with offices at Hudson, Pa. About 100 men are employed.

MONTH OF February — DAILY TIME RECORD — TRUCK No. Breaker

DATE	TIME IN HOURS AND MINUTES								SPACE FOR OTHER DATA
	TOTAL STANDING TIME		TOTAL LOADING TIME		TOTAL RUNNING TIME		TIME LAID UP FOR REPAIRS		
	HRS.	MIN.	HRS.	MIN.	HRS.	MIN.	HRS.	MIN.	
1	3	15			4	55			76
2	3	46			3	35		45	64 Motor in Pump
3	3	30			4	30	–	–	77
4	–	–			–	–	–	–	idle no cars.
5	–	–			8	–	–	–	136
6	–	–			–	–	–	–	Sunday
29									
30									
31									
TOTAL									
Daily Average									

FIG. 3—TIME RECORD MADE FROM RECORDER CHART
In right column is recorded the number of cars loaded and the reason for the delay or idleness. Calculation will then show whether loss of time is partly made up by greater activity when the breaker runs.

pendulum swings freely. The case is then closed and locked. As the machinery or the breaker on which the recorder rests vibrates the pendulum swings, making with each swing a mark on the recording dial. When there is no movement because the machinery or the breaker is idle no mark appears on the dial. In consequence the exact time during which the machinery is working is registered on the revolving platen. Every day these dials are collected and the time of full operation or its converse, the time of idleness, is measured.

Not only is the full time of operation shown but each stop also, and it is possible therefore to check up the entire operation of the breaker or motor by inquiring into the reasons for the particular shutdown. Finding out the causes of delay, some rearrangements may be made that will make such delays unnecessary in the future. Just the manner in which the records of this meter are made and used is shown in Figs. 2, 3 and 4. The first shows the actual performance of the breaker in one of its regular runs, the second shows how the results are tabulated day by day and the third expresses by means of a curve the operation of the breaker. By comparing the hours worked by the breaker and the number of cars loaded each day it is easy to determine if the breaker when working is at all times equally efficient.

So much for saving of time; now for savings of current. Two men employed to do the same work under precisely the same conditions will do it with entirely different expenditures of current. One man will be more efficient than another, and even where the efficiency of the least efficient has hitherto satisfied the management and is above the average, comparisons enable the

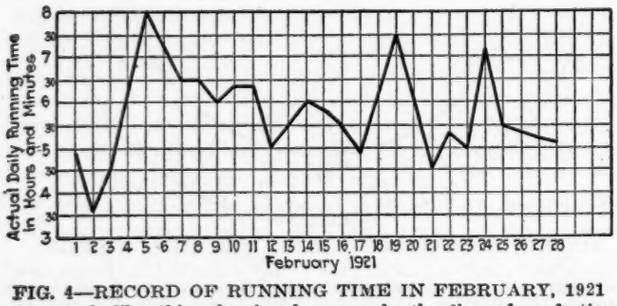


FIG. 4—RECORD OF RUNNING TIME IN FEBRUARY, 1921
A graph like this, showing how nearly the line of perfection was attained, acts as a continual stimulant to greater effort and to show what progress is made by new operating provisions.

officials and the man himself to see how his efficiency can be raised.

At this mine a hoist is installed which raises the coal through a short slope up a plane to the top of the breaker (headpiece). It was decided that the efficiency of the men operating the hoist should be tested. A Westinghouse graphic meter (Fig. 5), showing the current used, was hooked to the line. This was done without the engineer being informed. From the two charts thus obtained, parts of which are shown in this article, one engineer can be seen to be considerably more efficient than the other. In the first chart the engineer is shown to have used at times as much as 240 amperes and withal did not bring his loads as rapidly to the surface. It is evident that he threw the controller fully on when starting. On the other the other engineer used barely 160 amperes as a maximum and in most cases less than 144 amperes, and yet his hoisting time was shorter.

From these diagrams it can be readily deduced, therefore, that one engineer got out more coal with less

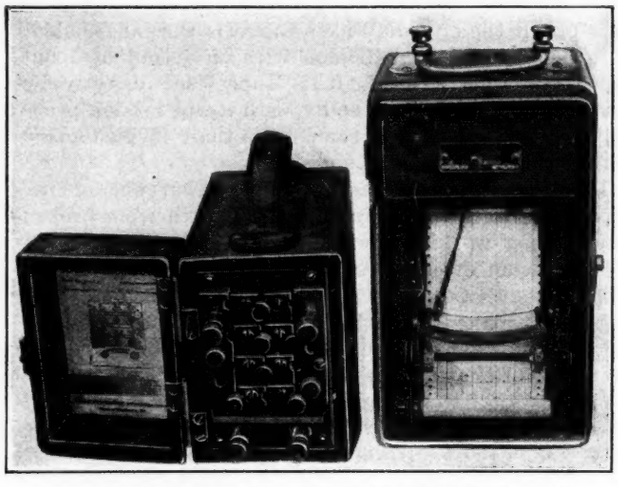
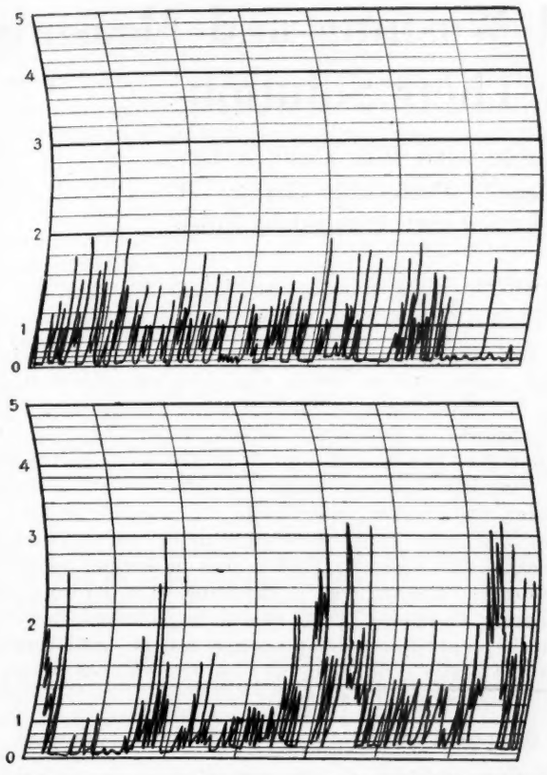


FIG. 5—GRAPHIC METER AND CONNECTIONS
This apparatus was used to ascertain how much power was being used to haul a car up the plane to the top of the breaker and how quickly the work was done.

power and in less time than the second engineer. Evidently with proper instruction the less efficient man could learn to do his work as well as the other man; if not he could be given work where his lack of co-operation or skill would not so greatly injure the company.

The use of electric power without the performance of work is one of the most unnecessary wastes of power around a mine. This type of waste is caused by short-circuits and grounding. At the Conlon Colliery much care is taken to prevent loss of power due to grounding, and for this the simple device illustrated diagrammatically in Fig. 8 is shown. A bank of four lamps (shown also in Fig. 9) connected in series is placed above the switchboard. Lamp No. 1 is connected to wire No. 1 from the transformer and lamp No. 4 with wire No. 3. A connection is made from the ground to a Westinghouse voltage relay. Another terminal of this relay is connected to a point between lamps Nos. 2 and 3. The other two terminals are connected with the leads to wires Nos. 1 and 3. One of these connections is in series with the no-voltage release coil on the main switchboard.

If there are no grounds on any of the lines, then the voltage of the ground lead is 186 volts. An increase



FIGS. 6 AND 7—RECORDS OF TWO MEN HOISTING SIMILAR LOADS ON INCLINE

The engineer whose power consumption was recorded in the upper chart, Fig. 6, used little power and, as can be seen by the frequency and regularity of his peaks, made more runs per hour. The second man was a current waster and did not land as many trips as the first man. He evidently needed instruction.

of potential of 4 volts in this ground will open the contacts on the relay and release the circuit breaker, on whichever line it happens to be.

In case of a ground in line No. 1, lamps Nos. 1 and 2 will light up; if in line No. 3, lamps Nos. 3 and 4 will light up, but if the ground is in line No. 2 all the lamps will burn brightly, in all cases increasing the voltage, which when normal is at 186. When the voltage rises

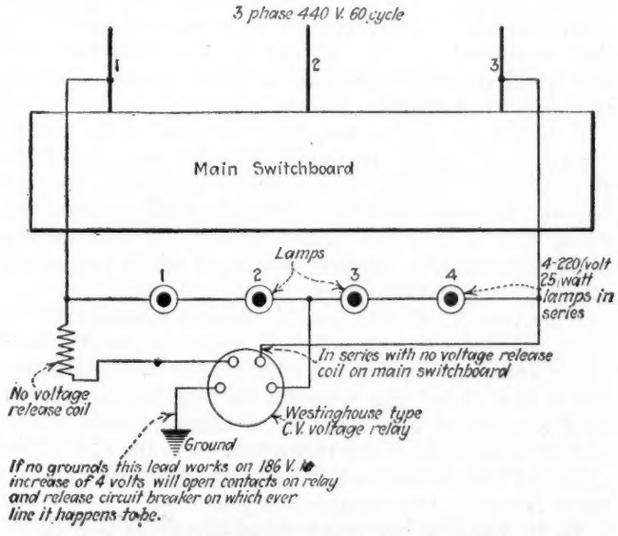

3 phase 440 V. 60 cycle
1
2
3
Main Switchboard
Lamps
1
2
3
4
4-220 volt 25 watt lamps in series
In series with no voltage release coil on main switchboard
No voltage release coil
Westinghouse type C.V. voltage relay
Ground
If no grounds this lead works on 186 V. An increase of 4 volts will open contacts on relay and release circuit breaker on which ever line it happens to be.

FIG. 8—ADJUNCT TO SWITCHBOARD LOCATES LEAKS

Short-circuits and grounding cause many current-losses, preventing the power being used for useful purposes. To this device the Conlon colliery gives much credit for lowering the cost of current to 9c. per ton.

in the ground above 186, the relay will open, breaking the circuit in the series coil on the circuit breakers and opening the circuit.

Having a system of this kind it is possible to detect instantly whether there is a ground in any of the circuits. Knowing this the electrician can locate the leak and make the needed repairs. It also tells him when the repairs have been made satisfactorily. When the lines have no grounds the lamps burn with a dull-red light.

By being able instantly to detect losses due to grounds and to ascertain what power is lost in electric machinery by inefficient operation this company has been able to keep its power bill down to about 9c. per ton of coal mined. No steam is produced at this mine. All the power is electric, and therefore with the proper testing apparatus and a man who understands its proper use large savings have been made. There are many

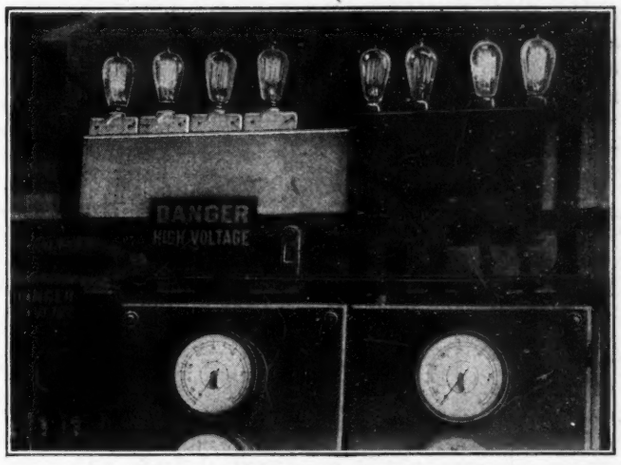


FIG. 9—WIRING OF LEAKAGE DETECTOR

In case of a ground in line No. 1, lamps Nos. 1 and 2 will light up. If one occurs in line No. 3, lamps Nos. 3 and 4 will light up but if the ground is in No. 2, all the lamps will burn brightly, in all cases increasing the voltage which, when normal, is at 186. When the voltage rises in the ground above 186 the relay will open, breaking the circuit in the series coil which forms part of the circuit breaker and opening the circuit.

operations in the anthracite region which show a power cost running many times the figure given here, for anthracite unfortunately cannot be mined with as small a power consumption as most of the bituminous coal of this country.

STUDY OF THE PHENOMENA of coal-dust explosions has been continued by the U. S. Bureau of Mines during the present year in a specially designed steel laboratory gallery. This gallery is 10 in. in diameter and 14 ft. long, and is provided with a breeching that has a small cannon and relief valves. Dust under test is injected into the gallery at points spaced 1 ft. apart throughout the length of the gallery and compressed air is used for projecting the dust. A study was made of the interval between the time of projecting the dust and firing the cannon and the influence of the temperature and humidity of the air within and surrounding the gallery was determined. More than 200 tests have been conducted with standard Pittsburgh coal dust, in a part of which inert shale dust was used to limit or prevent the propagation of flame. The galley has been equipped with the necessary pipes and meters to admit of the use of natural gas for the study of the influence of low percentages of gas on the explosibility of coal dusts. A number of dust samples from industrial plants and from coal mines have been tested in the gallery in connection with explosive hazard reports made by field engineers of the bureau.

Problems of Bituminous Coal Washing and Measures Now Being Taken for Their Solution*

Review of Washery Methods—Trouble with Wet Coal in By-product Coking—Why Wash Fine Coal?—Preferably Screen It Out, Wash the Coarse and Mix Washed Coal with Unwashed Fines

BY G. R. DELAMATER
Harrisburg, Pa.

IN THE last three or four years only a very few coal washeries have been constructed in the United States and it is not difficult to find the reason for this fact. During the past twenty years many washeries have been built employing the wet process with a wide variation in the method of its application. It would seem that a marked prejudice against this process in general is now held by practically all who are engaged in the mining and preparation of bituminous coal.

Until about ten years ago the jig in various forms was almost the only type of concentrator employed in the washing of bituminous coal. An exception was the Campbell bumping table, which has been installed in several of the largest washeries in the country. That the results obtained were quite satisfactory in many instances is proved by the recent construction of a second plant for the Cambria Steel Co. at Johnstown, Pa., which is one of the few washeries built in the last four years. Some effort has been made to introduce trough and log washers, but these proved unsatisfactory and attracted but scant attention.

Wet concentrating tables of various types, although extensively employed in ore-dressing plants, had never been used in this country for the preparation of coal, as it was quite generally felt that their capacity, considering the cost involved, made them impracticable for such use. Furthermore, their employment in ore concentration was confined to the small-mesh material, jigging of the larger sizes being the usual practice. No doubt this custom in a field generally conceded to be well advanced in the art of concentration had the effect of fixing the concentrating table in the minds of coal men as being unsuitable for treatment of the coarser sizes.

STAG CANON FUEL CO. INTRODUCES WET TABLES

The Stag Canon Fuel Co., of Dawson, N. M., probably was the first firm to attempt development of a wet table for the concentration of coal, both small-mesh material and some of the larger sizes. The results obtained attracted the attention of manufacturers of wet concentration tables and resulted in the development of several good types suitable for coal treatment.

Possibly the next development of importance was the introduction of the Dorr thickener to replace the old drag-conveyor sludge-tank equipment used as the first step in the reclamation of the washed coal from the water. Closely following this came the introduction almost simultaneously of the Wendell and the Elmore centrifugal continuous coal driers.

Rapid replacement of the beehive by the byproduct coke oven imposed an even greater need for improvement in coal-cleaning methods. For example, exceedingly wet coal charged to the beehive oven was not deemed objectionable and at times was even considered desirable, but coal with a moisture content in excess of 8 per cent charged to a byproduct oven usually resulted in a loosening of the carbon deposit on the walls of the coking chamber, thus creating leakages which seriously affected the yield of byproducts. It was found that in some instances the centrifugal drier so successfully overcame this difficulty that it was no longer necessary to store the washed coal in draining bins before it was charged. It should by no means be assumed, however, that the centrifugal drier always can be used successfully, as many conditions may be encountered where it would not be at all suitable.

BONSON TABLE GAVE QUITE PROMISING RESULTS

Various methods of dry concentration developed but probably the first to attract serious attention was the Bonson dry concentrating table. Promising results were obtained in its first application to coal, but, unfortunately, those in control of this process failed to co-operate with men of the coal industry thoroughly familiar with the requirements and conditions to be met. As a result the improved table failed to accomplish results equal to those achieved with the original device, and interest in this process died out completely.

The next development of note was the introduction of the "Chance Process" by the T. M. Chance Co., of Philadelphia, Pa. In this process sand is introduced into the water in a suitable container and by agitation is maintained in suspension, thus creating a liquid of high specific gravity. Separation of the impurities from the coal is accomplished in a manner similar to that employed in the laboratory float-and-sink test, where zinc or calcium chloride is used to produce a liquid of the desired specific gravity.

It would be well to mention here that some ten or twelve years ago J. R. Campbell, chief chemist of the H. C. Frick Coke Co., patented and experimented on a commercial scale with a calcium-chloride process, but while the separations were exceedingly satisfactory other objectionable features developed which caused the abandonment of this effort.

When the T. M. Chance Co. started development of their process on a commercial scale in the Pennsylvania anthracite field gratifying results were obtained; but it was found that with the rectangular tank which they were using they could not obtain a constantly consistent separation of the impurities from the coal. Upon adopting the old and well-known inverted Robinson cone tank, however, this trouble was overcome.

H. R. Conklin has under development at one of the breakers of the Hudson Coal Co. at Scranton, Pa., a process quite similar to the Chance method except that in place of a coarse granular sand a fine material is

*First part of article on coal-washing problems. Second part will appear in issue of Nov. 9.

used, preferably of high specific gravity and ground to pass a 200-mesh sieve. This process necessitates the employment of a Dorr thickener to reclaim the solids by which the desired gravity of the liquid is maintained. This process has shown some highly encouraging results. Its development and introduction is now controlled by the J. V. N. Dorr Co., of New York. No effort has as yet been made to apply either of these processes to the cleaning of bituminous coal on a commercial scale.

Coincident with these developments came the introduction of the Trent process. This is a radical departure from all other methods employed in the cleaning of coal. By agitation the pulverized coal is mixed with water and a suitable oil. The oil has an affinity for the carbon but not for the non-combustible particles. An amalgamation of the oil and carbon results. The ash reductions accomplished are quite remarkable as compared with results obtained by other systems of concentration. Some difference of opinion exists concerning the reliability of this process for the reduction of sulphur, also as to its practicability for cleaning coal to be used in the manufacture of metallurgical coke.

Dry Tables to Be Operated at McComas

Almost simultaneously with the introduction of these various processes Sutton, Steele & Steele, of Dallas, Tex., introduced a dry concentration table. The general apathy existing with regard to any wet process resulted in almost immediate interest being taken in this new table. A plant was built and put into operation in Oklahoma, another in New Mexico and testing plants were constructed both at Dallas, Tex., and at Welch, W. Va. Finally, a contract was given for a completely equipped plant to be built at McComas, W. Va., for the American Coal Co. This should be ready for operation about Jan. 1, 1923.

The present inactivity in coal-washery construction probably arises from the uncertainty in the minds of coal men as to whether a more satisfactory dry process has at last been found. Many coal companies are ready to contract for coal-cleaning plants but are patiently waiting for conclusive proof of the efficacy of the dry process through its additional commercial application before deciding between wet and dry processes for their own operations.

Within the past year two additional dry processes have appeared, one known as the Seagrave dry concentration table, now controlled by Walter J. Sykes, of Danville, Ill., and the other known as the Stebbins dry concentration table, being introduced to the coal field by Briscoe & Stahl, of Detroit, Mich.

While much is claimed for the Seagrave table, based on results said to have been obtained in ore concentration, no machine yet has been built and tested on coal, and therefore its value to this industry is unknown. The Stebbins table also is a Western development. It is reported that this table is being quite extensively and successfully used in ore and borax concentration. Testing and development has been under way at Detroit on both bituminous and anthracite coal with gratifying results. This table doubtless will be heard from in the future.

At present, therefore, the situation seems to be one of uncertainty, first because of dissatisfaction with old wet concentration methods and second on account of the incomplete development of both the new wet and the dry processes. Much of the dissatisfaction with any wet process arises not so much from any inability to accomplish satisfactory reductions in ash and sulphur content as from difficulty encountered in dewatering the washed coal, also from attendant coal losses and undesirable operating conditions resulting from wet coal of the smaller sizes.

The use of the thickener greatly diminishes coal losses in the smaller sizes, yet a question may be raised as to its suitability to coal-washing work as compared to that of the old drag-chain sludge-tank method on account of the moisture content of the reclaimed coal. As a water clarifier the thickener is far superior to the sludge tank, but the reclaimed coal product is in a fluid state while that of the sludge tank is a wet solid and in better condition for intermixing without further dewatering with the rest of the coal product of the plant.

By simplifying the equipment needed in wet concentration and by reducing the number of the operations needed, the objection to the use of water for that purpose will be removed, especially if the dewatering difficulties and coal losses can be eliminated. Granting this, wet concentration may yet hold a most important place in the cleaning of coal.

I have purposely neglected to mention another development introduced by myself about four years ago in which the screening of the coal plays an important part. Before taking up the details of this process I wish to emphasize the importance of the screen in the future of coal concentration. In many instances it will be found that sufficient ash-and-sulphur reduction may be accomplished if the coarse coal only is washed, thus necessitating the screening out of the smaller sizes before the washing process is begun.

With dry concentration close sizing of the coal has been found advantageous. Scant success has resulted from efforts made to dry-concentrate coal below 16 mesh, and the difficulties and expense encountered in eliminating obnoxious dust where attempt is made to clean such sizes make dry concentration of fines of doubtful value.

Jig for Lump, Air for Slack, Use Dust Raw?

While fair success is reported in dry concentration of the larger sizes it has yet to be proved that such sizes can be more cheaply cleaned in this manner than by a jig. In many respects the intermediate sizes would seem to be the legitimate field for the dry process. While it may ultimately appear that some coals can be more efficiently and cheaply cleaned by wet process and others by dry, it is more than probable that a combination of the two will suit the majority of cases. Thus the screen is sure to enter the coal-cleaning problems of the future.

Prior to the introduction of screening equipment of a type wherein the screen cloth is electrically vibrated at great rapidity without movement of the heavy frame of the machine, the cost of screening coal in large quantity and through comparatively small mesh made consideration of such a process prohibitive. The data presented herein, however, will show the possibilities of the use of this type of screening equipment.

Attention is particularly called to the fact that instead of washing all the coal, the fines were screened out ahead of the washery and only the oversize from the screens treated, the unwashed fine material being bypassed and mixed with the washed oversize coal.

Instead of this resulting in a higher ash and sulphur

content in the finished product as compared to that obtained when all the coal was washed, it was found that with the ash and sulphur in the raw coal the same, a much higher yield resulted. It also was discovered that by the use of such a method a considerably lower ash and sulphur content of the finished product could be obtained even though the yield still remained above that resulting from washing all the coal.

I do not claim that such a method will apply to all cases, yet I feel that as the coal upon which tests were made was a mixture from more than one hundred mines in the states of West Virginia and Pennsylvania, the results obtained would indicate that such a method may apply to a greater or less extent to many if not most of bituminous coals. Each operator finding it necessary to wash coal owes it to himself to investigate thoroughly his own product in order to determine whether such a method of operation would be helpful to him.

I know of at least one instance where an operation supplying large tonnages of steam coal for power-plant use has found that its customers, while naturally desirous of obtaining low-ash coal, are more vitally interested in obtaining fuel of a constant-ash content, as this renders it easy to obtain consistently efficient power-plant operation. In this instance careful investigation has shown that by washing coal that is retained on a ½-in. screen and mixing with the washed product all coal that will pass this screen, a product results that is not only of almost constant ash content but is also much lower in ash than the average steam coal on the market. Furthermore, the washing of only the coarse sizes results in no difficulties from high mositure.

What if the Smaller Sizes Are the Dirtier?

The elimination from the washery of the smaller sizes of coal will strike many as inapplicable to their own washery problems for the reason that some of these smaller sizes have the highest sulphur content of any of the sizes present. That was true also of the coal used in these tests. It might seem quite reasonable to assume that, under such conditions, the smaller sizes must be washed, yet it is more than likely that but few washery operations have ever had carefully conducted tests made to determine to what extent the sulphur content of the final product is affected by any sulphur reduction that may result from the washing of these small sizes. The same also may apply to the ash.

I feel that it is reasonably safe to say that, on account of the lack of such investigations, few are in a position to know definitely the real effect of washing these small sizes. It also would seem reasonable to assume that little is known of the portion of the average bituminous coal which can be but little affected by washing and that, on account of such portion being washed, some of it may not only be found as a part of the coal losses apart from coal found with the refuse but may account for a considerable portion of the free coal in the refuse. Another condition that was brought to light in our work was that there are in some instances certain sizes of the coal which are more or less non-coking.

During the time that I was in charge of the coal washery section of the U. S. Geological Survey, before the formation of the present Bureau of Mines, I frequently noted the fact that the majority of coal washeries in this country produced a rather low-ash refuse and that usually this was due to the presence in the refuse of considerable coal of the smaller sizes. This not only applied to coals of the Eastern states but also those of the Rocky Mountain district. Later experiences with coal from various parts of the country and from the Argentine Republic and Alaska have brought this situation more and more to my attention, with the result that the tests were made, the results of which will be set forth in a succeeding article. I have also recently made a study of this situation in the Alabama field. David Hancock, consulting engineer and chemist, of Birmingham, Ala., has made extensive studies the result of which quite conclusively prove this contention as regards much of the coal in that district. He has devised a special chart upon which are graphically shown in a surprisingly effective manner the results of float-and-sink tests made upon the raw coal, and the washed coal and refuse products of various coal washeries in that district. Others in that field also have proved by similar investigations that it would be advantageous to bypass the fine coal around the washery.

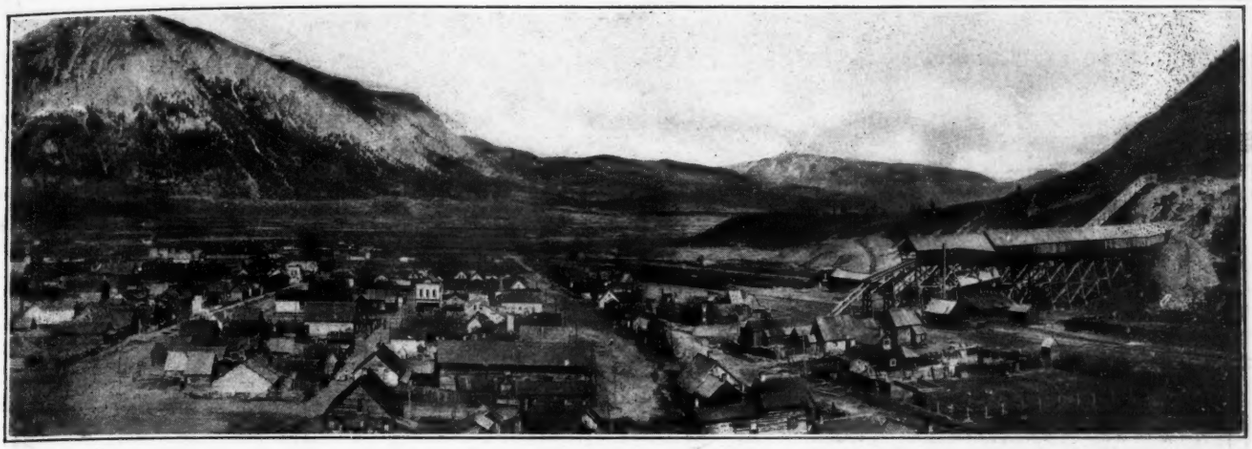
Sandstone Dykes Through Whitehaven Coal

AS USUALLY interpreted a dyke is an igneous intrusion passing across the geological strata. Thus defined a sandstone dyke is an absurdity. The material could not be of igneous origin but the crack in which the sand was found might have been formed by an earthquake and so be due directly to volcanic action. If, then, the term may be permitted, dykes of sandstone have been found in the coal beds of Whitehaven, Cumberland, England.

They were described at a meeting of the British Association for the Advancement of Science by Professor A. Gilligan. The Whitehaven sandstones, extensively exposed in the cliffs along the sea front, show no such signs of cracks and sand fillings. The sandstone probably rests somewhat unconformably on the Lower Productive Coal Measures, and it is believed that the earthquake action occurred shortly after the period of deposition of the Lower Coal Measures and not later. Only in one case is the crack a true fault, and then the displacement is only 2½ ft.

The average width of the dykes is from 2 to 4 in., but sometimes they increase to 10 in. or dwindle down to mere films. The dykes are sometimes split. Veins of calcite and barytes traverse the dykes longitudinally and transversely and lenticles of shale and coal also are of frequent occurrence in some portions of the dykes. Professor Gilligan said that he believed that the dykes were filled by deposition from the unconsolidated sands that ultimately formed the Whitehaven sandstone. In the discussion Professor Kendall mentioned one or two examples of earthquake dykes which he asserted had been filled by sand forced up from below.

FOR THE PURPOSE OF DETERMINING SPECIFICATIONS for the construction of concrete stoppings in coal mines that may be developed on the public lands of the United States, the U. S. Bureau of Mines, in co-operation with the Bureau of Standards, is constructing in the experimental mine at Bruceton, Pa., a chamber in which it is proposed to conduct tests to determine the strength of reinforced concrete stoppings when subjected to a pressure up to 50 lb. per square inch, suddenly applied. The tests require the construction of a permanent stopping, which was completed at the close of the fiscal year, and a test stopping, which is under construction in accordance with a design prepared by the Bureau of Standards. The work is under the personal direction of J. W. Paul, chief coal mining engineer, assisted by H. C. Howarth.



Crested Butte Field Produces Four Kinds of Coal From a Territory Five Miles Wide

Anthracite and Three Grades of Bituminous Coal Are Mined in This Cold Timber-Line Region—Lava Flows Have Matured the Coal, Leaving Three Per Cent of Volatile Matter

BY CHARLES M. SCHLOSS
Denver, Colo.

NOWHERE, perhaps, in the world can a greater variety of coal be found in as small an area as in the Crested Butte field of central Colorado. Four kinds of coal, ranging from a bituminous of low rank to an anthracite of high rank, are all mined within a circular area five miles in diameter.

Crested Butte lies in the Elk Mountains on the western slope of the Colorado Rockies. The field is handicapped by its isolation and by the fact that all it produces and all it ships in must travel by a narrow-gage railroad and be transferred to or from standard-gage equipment. It prospers nevertheless, distributing its anthracite over the entire western half of the United States as well as north into British Columbia and south into Mexico. The transference point is Salida, on the Denver & Rio Grande Western R.R. Here the Rio Grande Southern narrow-gage road commences its 316-mile stretch to Crested Butte.

That region at its five plants mined in 1921 only 197,228 tons of coal, a little over 2 per cent of the total output of Colorado during that year, that output being 9,141,947 tons. The four coals mined are all high-grade coals. They are respectively non-coking bituminous, a bituminous making a strong coke, semi-anthracite and anthracite. They will analyze as in Table I.

TABLE I—ANALYSES OF CRESTED BUTTE COALS

Type	Moisture, Per Cent	Volatile Matter, Per Cent	Fixed Carbon, Per Cent	Ash, Per Cent	B.t.u.
Non-coking	5.52	34.64	56.39	3.45	13,250
Coking	2.46	34.43	59.60	3.51	14,011
Semi-anthracite	0.40	10.80	80.60	8.20	14,430
Anthracite	2.70	3.32	88.15	5.83	14,099

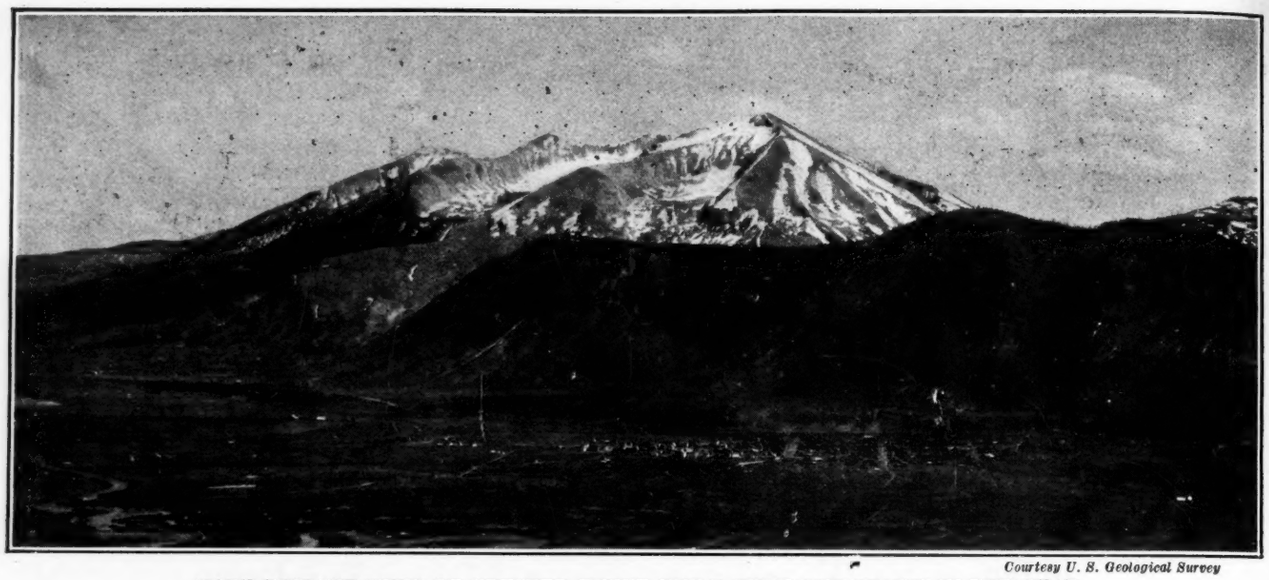
The non-coking coal is an excellent domestic fuel, the coking is the equal of any heavy-draft locomotive bituminous coal in the United States, and the anthracite fully equal to that of Pennsylvania. The latter has the advantage over the better known coal in that Eastern state in being much freer from dirt, rock and bone. It is, further, with one exception the only commercially developed anthracite west of Pennsylvania, the one exception being a small bed at Los Cerillos, N. M., near Albuquerque.

Because of its excellence, Crested Butte anthracite enjoys an unusually broad market, bounded by the Pacific Coast on the west, Mexico on the south, Kansas City and Omaha to the east, and Canada to the north. Some goes to Mexico, some to British Columbia; one car found its way as far north as Nome, Alaska. Denver consumes more than any other city, San Francisco is next, and Kansas City third. Kansas and Nebraska, however, are the large consumers.

The operators in the field have standardized on the following sizes: Nos. 1 and 2, 2⅜ in. to 5 in.; Nos. 3 and 5, 1¼ in. to 2⅜ in., and No. 6, ⅝ to 1¼ in. Nos. 1 and 2 are adapted for large domestic furnaces and open grates; Nos. 3 and 5, for base-burners, kitchen ranges, small domestic furnaces, and open grates; No. 6, for domestic furnaces with small openings in the grates, kitchen ranges, laundry stoves and for banking furnace and range fires. On the refuse piles of Crested Butte a third of a million tons of anthracite dust have accumulated. It is only in recent years that a market for this "carbon dust" has been found. Smelters manufacturing zinc oxide for paints find it a prime fuel and reduction agent.

To the one who seeks the whys and wherefores of natural phenomena the Crested Butte field gives much material for investigation and study. Geologists basing their hypotheses on the presence of porphyry masses and eruptive mountains credit the variety of coal found here to a flow of eruptive rock emanating from the main range and covering much of the sedimentary strata. The intense heat of the incandescent liquid rock meta-

NOTE—The headpiece is a view of Crested Butte furnished by courtesy of Frank Bulkley, president of the Crested Butte Anthracite Mining Co., and *Mountain States Mineral Age*.



Courtesy U. S. Geological Survey

MORE DISTANT VIEW OF CRESTED BUTTE FIELD WITH MOUNTAINS IN THE REAR

A truly mountainous region, some of the mines being 10,000 ft. above sea level. Buildings must be placed where snowslides will do least damage.

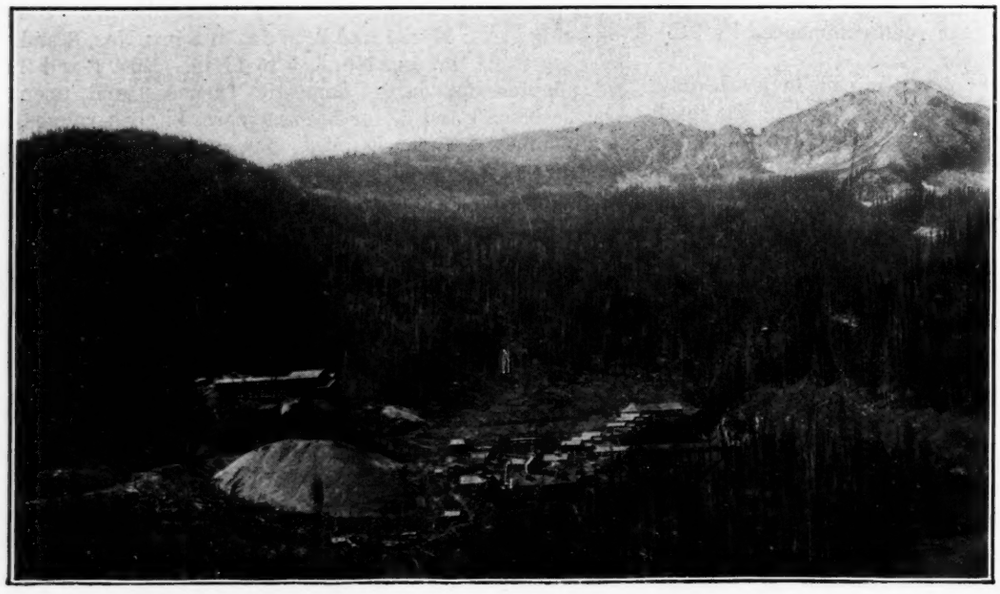
morphosed the bituminous to anthracite wherever it came anywhere near the coal. No trace, however, of the lava flow remains; it has been entirely removed by erosion.

Due to various rock movements the coal beds are more or less irregular in thickness. Many local, but not serious, faults are present. The roof and floor are either sandstone or shale. The bituminous beds vary in thickness from 4 ft. to 16 ft., the anthracite from 2 ft. 6 in. to 4 ft. The coal beds are either horizontal or on a moderate pitch. Many props are used, but their cost is not high. They are cut on the hillsides around the mines.

The coal at Crested Butte was discovered in 1879. Lack of shipping facilities delayed exploitation until 1881, when, upon the advent of the railroad, the first bituminous mine was opened. This same property has been producing ever since—more than 40 years.

From an engineering or mining standpoint Crested Butte offers nothing extraordinary. Its methods and machinery are not unusual. Two of the mine openings are so much higher than the railroad that gravity planes are necessary to land the trips at the dumps. The remainder are at tipple level. One mine sank a shaft but later abandoned it and began taking coal from another bed through a slope; the other openings are either drifts or slightly pitching slopes; the steepest has an inclination of 7 deg. Two are gaseous and use electric lamps; open lamps are used in the others.

In 1921 two shortwall coal cutters cut all the machine coal—only 3,641 tons. Longwall advancing methods are successfully applied by one company, room-and-pillar by the remainder. The machines operate in room-and-pillar workings. In 1921 55,323 pounds of black powder were consumed, that being used more than any other explosive. However, 5,415 lb. of permissible and 4,650 lb. of dynamite also were used. Haulage motors are conspicuous by their entire absence. Mules and hoisting drums substitute for them. Coal washeries and cleaning plants, likewise, are not found. Some refuse is picked out at the faces and the remainder in the screening plants.



Old Ruby Anthracite Mine, Now Abandoned

Note the trees around the plant growing up to levels near the timber limit. Climate is so cold that Japanese, Greeks, Mexicans and negroes avoid it.

Photo Courtesy, U. S. Geological Survey

Cable Cut by Rock from Bottom Shot Fires Crevice Gas

Ignition of Gas in Atmosphere Filling Longwall Face Fatally Burns Eighteen Men, Doing Hardly Any Damage in Mine of Canadian Collieries, Ltd.—Shot Said to Be Flameless—New Electrical Regulations

EXCELLENT as were the safety provisions at the No. 4 Mine of the Canadian Collieries (Dunsmuir), Ltd., at Cumberland, Vancouver Island, Canada, gas nevertheless collected in it and exploded on Aug. 30, killing eighteen men. A report made by George Wilkinson, former chief inspector of mines for British Columbia, who was given a special investigation commission by William Sloan, Minister of Mines, details the circumstances and gives advice as to the manner in which a repetition of such a disaster may be avoided. Of those fatally injured on this occasion only two were British, one being a Russian, six being Japanese and nine Chinese.

Briefly, Mr. Wilkinson finds that the source of the trouble was a flash, or open sparking, caused by an arc in the electric trailing cable at the socket used to connect this cable with the main electric circuit. This electric cable furnished the necessary power for the operation of a coal-cutting machine. The latter, a Sullivan alternating-current chain cutter, was of a type approved by the U. S. Bureau of Mines for use in gaseous mines.

New Rules for Electrical Operations

"After giving the matter careful consideration," says Mr. Wilkinson, "I would recommend the adoption of the following rules as part of the Coal Mines Regulation Act and would further suggest that the use of electricity be fully investigated by the Department of Mines, so that, if possible, definite conclusions may be reached as to the conditions under which the use of this power underground in coal mines may be permitted." The rules recommended are:

(1) The terminals of main feed lines in no case shall be located within 50 ft. of any coal face. (2) The current shall be cut off and the cables made dead in that vicinity when blasting, and the current shall not be switched on again until blasting is finished and the places are examined and pronounced safe and until the cables have been examined and found free from any defect. (3) All permanent electrical installations and transforming stations underground shall be made fireproof. (4) All switches and terminal connections shall be protected or enclosed so as to prevent persons coming accidentally into contact with them, to avoid danger from arcs or short-circuits resulting from fire or water. Where there may be risk of igniting gas, coal dust or other inflammables, all parts shall be so protected as to prevent open sparking. (5) All cables used underground shall be covered with insulating material, and, where high voltages are used, properly armored cables of standard thickness shall be provided. (6) All trailing cables shall be of properly armored construction whatever voltage is used.

Confidence is expressed that these rules will give an additional margin of safety. Rules 1, 2 and 3, it is asserted, should be put in force at once. As for Rules 4, 5 and 6, it probably will require three months to obtain and install the armored cables and other material required to make them effective. Mr. Sloan already has taken the action necessary to give these recommendations the effect of law. Orders in council have been passed and from Oct. 2 the rules enumerated have been a part of the Coal Mines Regulation Act. In the course of "general remarks" the report reads:

"It was a small explosion to take such a heavy toll and only a combination of circumstances made it do so. Occurring on a longwall face many men were in the path of the flame despite the short distance it traveled. As most of these men were working at the face and the seam was not thick, they could not escape. It is my opinion that if the current had been cut off the cable while the shot was being fired there would have been no explosion, and the fireboss erred in not requiring this to be done seeing that the terminals of the feed cables were in such close proximity to the shot.

"The terminals of the main feed line should not have been located so close to the face and fixed flameproof terminals should have been used. I do not mean to infer that an arc could not have been created if the terminal boxes had been installed, for if the blow had been of sufficient force to draw the bare end of the connecting cable clear of the insulated material, an arc might nevertheless have been created, but the chances of this happening would have been decreased. It is questionable whether, owing to the quantity of gas liberated by the strata and the peculiar conditions existing, it would be wise to continue the use of electric mining machines in this section.

"Up to the present, because electric power has been used to only a limited extent in the mines of British Columbia, no specific regulations governing its use have been made. No doubt it will be used more extensively in the future as it already is in the coal mines of the United States and Great Britain.

Danger Lurks in the Cable Connection

"These electric coal-cutting machines were installed by the Canadian Collieries (Dunsmuir), Ltd., nearly seven years ago, and the recent accident is the first recorded. Though the machines are approved by the U. S. Bureau of Mines, their safety must be judged by the weakest link, which in my opinion is the cable and especially that connection which is in close proximity to the working face.

"Edison electric safety lamps are used throughout the mine. The only exceptions were the few flame safety lamps used for testing purposes. No one was permitted to blast the coal in this section, and most of the bottom lifting was done without blasting. Explosives were used only in places where the rock was so hard that it could not be lifted without it. Even then only permissible explosives were used.

"It is hard for the higher officials and the inspectors to watch every detail in a mine of this size. The terminals of the main lines are being moved from time to time, and this detail comes mainly under the control of the under officials. Enough electricians were employed to do this work, and an adequate number of certificated officials were employed to supervise it. In

addition to the large staff of regular officials, the company employed a safety engineer who holds a first-class certificate of competency. He constantly patrols the works inside and out, checking up and pointing out any defect that may cause accidents."

The mine has but one main entrance from which at a point 75 ft. from the portal two slopes diverge, No. 1 slope being 7,000 ft. long and running due north, and No. 2 slope being 9,000 ft. long and running north 45 deg. east. Levels have been turned off the latter slope in an easterly and westerly direction.

The explosion occurred in what is known as the longwall district off No. 20, East Level, No. 2 slope. Part of the face is machine-mined, the coal from that part being shoveled into cars by loaders. Another part is worked by hand miners. A trailing cable 200 ft. long connects the main circuit to the machine.

With reference to the condition of the mine as to gas, Mr. Wilkinson quotes the daily reports of firebosses from Aug. 23 to Aug. 29, the inspectors' reports for the months of June, July and August, and the gas committees' reports for the same three months. From these reports, he observes, it is plain that much gas is being made in this section of the mine, chiefly due to the roof breaking through to a small seam of coal about a foot thick which lies about 15 ft. above.

The firebosses' reports show that explosive gas has been found in small quantities in No. 3 level and other places in that vicinity and that a ⅜-in. gas cap was obtained at points along the roof line, but that it was less as the lamp was lowered and probably did not exceed ⅛ in. from No. 3 level to the end of the longwall face. No explosive gas or gas caps have been reported below No. 3 level.

According to the length of the flame caps and their relation to percentage, as shown in a pamphlet issued by the Department of Mines, the above-mentioned caps of gas are equivalent to 2.08 per cent and 1.08 per cent respectively. The low explosive limit is 5.5 per cent. The withdrawal point as set by the Coal Mines Regulation Act is 2.5 per cent, leaving a margin of safety of 3 per cent. But the margin in this case appears to have been 3.42 per cent.

Many Deaths but Little Explosive Violence

Mr. Wilkinson states that conditions as he found them in his examination of Sept. 1 indicated that the mine had been little damaged by the explosion. He goes on to tell in detail of the conditions in each level visited. Regarding No. 1 slant off No. 4 level* he says: "About a ¼-in. gas cap was obtained in this place and an atmosphere that was explosive in a cavity on the right side of the roadway above the terminals of the main circuit of the electric power line. The trailer cable from the mining machine is connected with the main line at this point.

"A shot had been fired in the floor of this place, and it was almost simultaneously with the firing of this shot that the explosion occurred. A rock flying from the shot had come in contact with the trailing cable with sufficient force to break the insulation and bare one wire and had also torn one of the three connecting wires from the socket where they were connected with the main circuit. The shot had done its work well. Monobel, a permitted explosive, was used.

"No damage was done in this place but much dust was deposited on the timbers. The shotlighter with two of the workmen out of the place stood in No. 2 roadway off this slant about 30 ft. distant from the shot. They were slightly burned on the face, hands and arms. A car standing about 45 ft. from the face had not been moved. In No. 3 slant, No. 2 level, No. 1 place, there was no damage. A car was standing at the face and apparently had not been moved. The badly burned body of John Johnston, a miner, was found on the slant about 80 ft. back from the face.

"In No. 2 place, off No. 3 slant, No. 2 level, there were signs of considerable heat from flame. Two shovels were standing against a cog on the face line in this place. There had not been sufficient force to move them. In No. 3 slant a 5-ft. post was found with the saw in position for cutting. A car was standing undisturbed."

Ignition of Gas Rather Than an Explosion

Commenting on the evidence Mr. Wilkinson asserts that the outbreak may better be termed a burning of gas than an explosion. He adds: "It would appear as if the percentage of methane had bordered on the lower explosive limit. The flame passed up the longwall face with the air current. The shotlighter, who was standing 30 ft. below the point where he was firing the shot, was only slightly burned. E. McAdam, who was working in No. 1 level, about 700 ft. up the face, did not see any flame, consequently the distance it traveled along the longwall face did not exceed 750 ft."

It is stated that conditions point to No. 1 slant of No. 4 level as being the point of ignition. It was in this place that a shot was fired in the bottom, as described. The roof in the place is broken and full of slips and crevices, and there is a cavity which has a length of 8 ft., a width of about 1½ ft. and a height above the roof line of about 1.2 ft. Fissures and crevices extend back into the gob; to what distance and height is unknown. A fault with an approximate downthrow displacement of 3 ft. had been crossed by the place above this. It had run out before it reached this place, but it extended for some distance in the opposite direction. This resulted in a considerable area of exposed roof being badly broken, and no doubt the breaks in this roof continued upward to the small seam which overlies the one being worked. The crevices made by these breaks would provide a large storage space for methane, as the ventilating current could not be diverted to clear them. This gas also would be out of reach of anyone testing, as a safety lamp could not be got into the crevices.

Small quantities of explosive gas had been found in several places on the return side of No. 1 slant for some time prior to the explosion. This being so it is not safe to presume that the crevices higher up, which could not be examined because of their inaccessibility, also contained methane. The distance traveled by the flame was not great, and it died out after passing the working places in the disturbed area, showing that there was lack of explosive material elsewhere.

Commenting further on the cause of ignition it is stated that the main three-phase circuit was carried up No. 1 slant, No. 4 level, to a point approximately 16 ft. from the coal face and about 4 ft. from the end of the bottom lifting. The top cable was about 1.7 ft. below the roof line and the bottom of the cavity. The lower cable was about 3 ft. above the top of the rock to be lifted. Mr. Wilkinson speaks again of the break-

*Apparently all these areas relate to longwall district No. 20, East Level, No. 2 slope. Thus No. 1 level is not the first level in the mine but the first in the district. Furthermore, the longwall face apparently extends from No. 1 level to No. 4.—Editor.

ing of the wire by flying rock following the firing of a shot and asserts that there must have been considerable flash from the arc so created. The break occurred only about 2 ft. from the cavity.

There were only two possible sources of ignition; one, the arcing of the electric circuit, and the other, flame from the explosive in the shot. The shot was a good one, according to Mr. Wilkinson, and the chances that any flame resulted are remote. It was some 8 ft. from the cavity, whereas the junction point of the trailing cable was only about 2 ft. distant. He adds: "From conditions as seen after the explosion I have to conclude that actual ignition must have been from flame or sparking from the electric wires."

References are made in the report to the evidence of the fireboss at the inquest to the effect that he had carefully examined the place before firing the shot and found no gas and also that he had examined the cavity in the roof with similar results. Mr. Wilkinson expresses doubts of this. It is possible, he says, that this was done, and that there was a change between the time of examination and the firing of the shot. However, assuming that the cavity was clear, so far as could be ascertained by the fireboss, the crevices above it no doubt contained gas.

On June 26, 22,000 cu.ft. of air were provided for the use of sixty-two men and eight mules; on July 25, 20,000 cu.ft. were supplied, and on Aug. 11, 25,000 cu.ft. were circulated for the same number of men and mules. The amount passing is nearly three times that required by the Coal Mines Regulation Act under normal conditions, according to Inspector Jackson's reports. Since the installation of a booster fan, electrically driven, for augmenting the ventilation the quantity passing in this district has been increased some 6,000 cu.ft. per minute.

Officials of the Canadian Collieries are said to have been faced with unusual difficulties in the ventilation of the mine, which is of large extent, having been operated for thirty years or more. Large extraction of pillar areas in the earlier days of operation, without any thought for the future, has made many difficult problems which the present-day management is endeavoring to solve. Thomas Graham, the superintendent, and his staff have made many improvements in the past five years. Among these are "the building of permanent stoppings with a gunite finish on main airways practically throughout the mine, the installation of a second fan of the Sirocco double-inlet reversible type with a rated capacity of 200,000 cu.ft. per minute against a 6-in. water gage and the construction of a new and separate return airway through the old works for practically the whole length of the slope."

Work Both Wood and Metal on One Machine

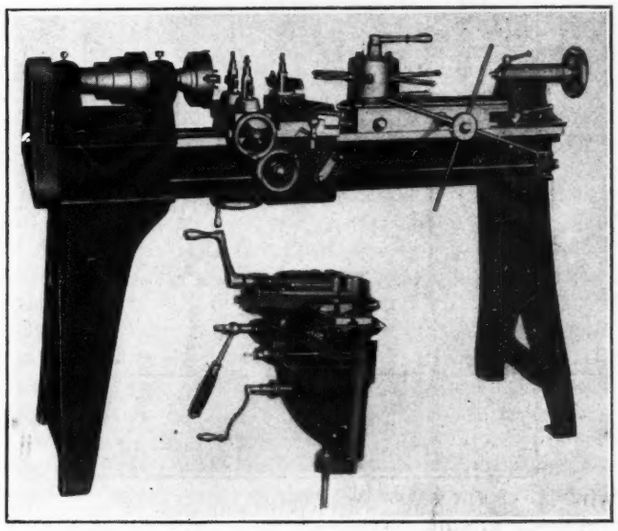
ONE of the "side issues" of every coal mine—one of those things that contribute nothing directly to the extraction of coal yet without which little coal would be produced—is the mine shop. In the old days this was a blacksmith shop pure and simple—a place where mules were shod, picks sharpened and drills and augers dressed. With the passage of years, however, the equipment of the mine has changed and similarly the needs of the shop. The electric locomotive, the coal cutter and various mechanical appliances of a similar nature necessitate a type of repair impossible with only forge, anvil and possibly hand drill press.

Of all the machine tools yet invented it is well recognized that the lathe, being the most flexible, possesses the greatest possibilities. American manufacturers have developed this machine to a high state of perfection; that is, they have developed many special lathes adapted to special uses. In the mine shop, however, particularly if this shop be small, the special tool is the type to be sedulously avoided. On the contrary, the kind of lathe most to be desired is an "all around" machine or what might be termed a jobbing lathe—that is, one upon which a great variety of operations may be performed without its being specially designed or adapted for any one in particular.

In the accompanying illustration is shown a lathe recently placed on the market and well adapted to the small shop having a variety of work to perform. This lathe is designed for turning either wood or metal and is made rigid enough to withstand the possible high-speed vibration of the former and the heavy cuts of the latter.

Possibly of most interest to mining men, however, is the large number of attachments with which this machine may be provided. For metal working these include grinders, buffers, millers, gear cutters, etc., and for woodworking they embrace sanders, grinders, buffers, polishers, band saws, jig saws, jointers, planers, saw tables, mortisers and the like. Of course, the procurable equipment includes raising blocks, a compound rest and a turret. Many others also are available, built especially to fit this machine.

Thus it will be seen that this machine is adapted to the performance of many operations. The attachments, such, for instance, as the band saw, take up far less floor space than would separate machines performing the same service. When not in use these may be taken off and set to one side out of the way. This machine is being built and marketed by the Little Giant Co., of Mankato, Minn.

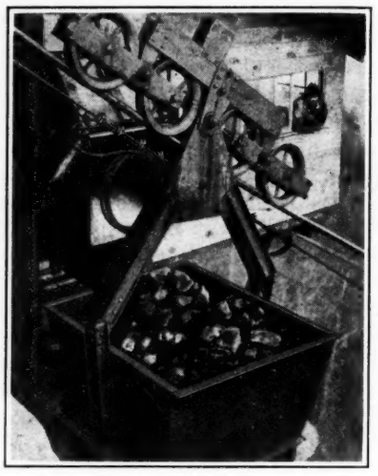


METAL AND WOODWORKER IN A SINGLE UNIT

Will turn, drill, grind, buff and mill metals and cut gears. It will turn, drill, sand, grind, buff, polish, band saw, jig saw, joint, plane and mortise wood. In some operations there are more efficient machines but mines which cannot erect a complete machine shop want a composite unit even if not as efficient as one of specialized construction.

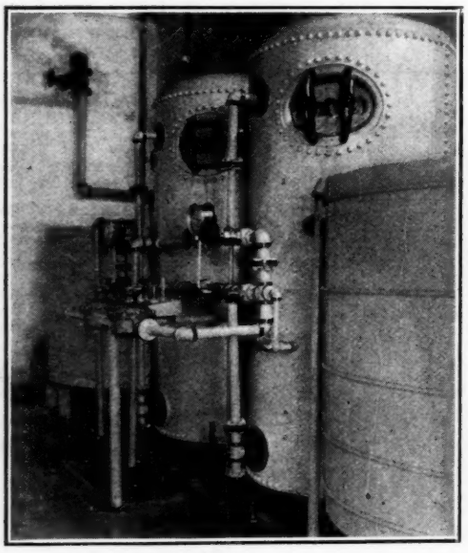
Huntington Show Suggests Modern Ways of Reducing Coal Cost—II

Abrasives for Keeping Tires in Condition—Self-Renewing Water-Softening Material—Means of Ridding Mine Towns of Typhoid—Bucket Conveyors—Helical Gears



IN AN ARTICLE regarding the Huntington Coal and Industrial Exposition, Sept. 18-23, appearing in *Coal Age* last week, the wide, low, capacious mine cars of the West Virginia mining region as shown at several booths were described as well as an electric rivet heater and a mine hoist of large rope capacity.

At another booth was an exhibit of "feralun," the substance which, set in a brake wheel, wears off false flanges and so makes it unnecessary to take the wheels off their axles, to turn down the tires and replace the wheels, to lay off mine locomotives temporarily while this work is being done, and to renew shoes. Moreover, wear and tear on frogs and switches are prevented by this grinding, as also the derailments that are the result of false flanging. The cutting of fishplate bonds is avoided and electric welded bonds if attached to the upper part of the rail are protected from injury.

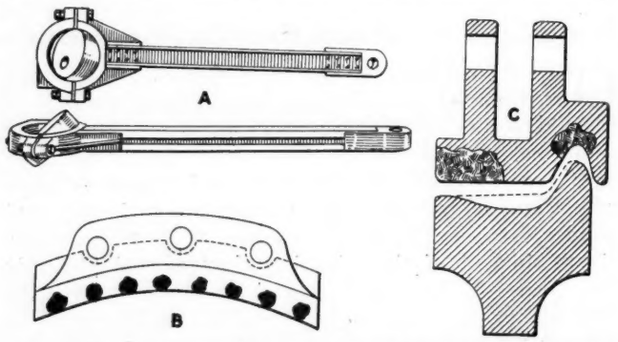


SOFTENING PLANT AT BORDERLAND, W. VA.

Twin zeolite unit established at the mines of the Borderland Coal Co., in Mingo County, W. Va. The plant delivers 84,000 gallons of zero soft water daily from a river containing an average of 4½ grains of hardness per gallon. By use of two alternating units the water is softened continuously 24 hours per day.

NOTE—The illustration in the headpiece shows the bucket at the head of the ropeway at the Bradshaw mine in West Virginia.

When the brake shoe with abrasive material imbedded in it has ground down the false flange, the body of the shoe that has no cutting abrasive rests on the main portion of the wheel, the part that runs on the rail and is worn by traction and sparking, and the cutting substantially ceases except as much as is necessary to keep

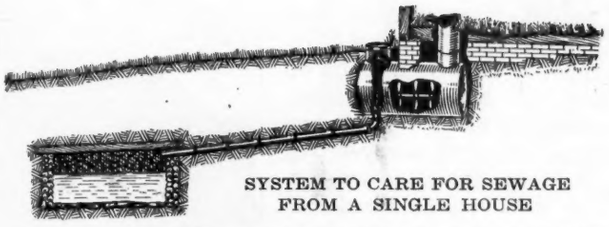


UNIVERSAL-MOTION ECCENTRIC AND ABRASIVE SHOE

A is an eccentric for use with shakers or in other places. With it proper alignment is a matter of no consequence, as the eye is a self-oiling ball. *B* shows locomotive shoe with abrasive material set in the tread and *C* a cross-section of such a shoe and part of the wheel on which it acts. When the wheel has worn down as shown the abrasive wears off the "false flange" and restores the surface.

the wheels true. Abrasive shoes are put also on new wheels to prevent them from getting out of shape. The keeping of false flanges off tires saves the rail surfaces from much wear.

Interesting also was the exhibit of the Permutit Co. Permutit is a zeolite (so called because it intumesces or acts so rapidly as to be said to boil when acting on the hardness in water). It is a sodium aluminum silicate that exchanges its sodium for lime or magnesia when those elements come in contact with it in the form of the hardness in water. It has the advantage that it can be regenerated by passing through it common brine (sodium-chloride solution). In consequence when permutit is used to soften water before its introduction into the boiler of feedwater heater, the chemical after change need not be thrown away but can be used again and again after it has been regenerated by brine. The regeneration cycle is ordinarily arranged to take place at night, when the plants are closed, or two softeners are placed in parallel to give a 24-hour continuous serv-



SYSTEM TO CARE FOR SEWAGE FROM A SINGLE HOUSE

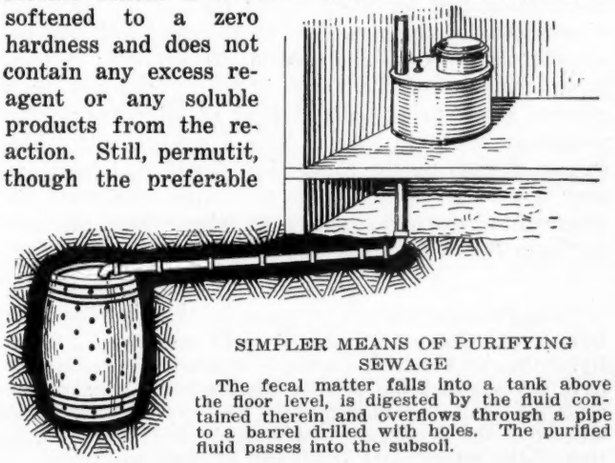
In this illustration the porcelain parts of the toilet are omitted. The fecal matter falls into a circular tank which contains a digesting solution. The material to be rendered innocuous and fluid is both moved forward and agitated by paddles, which themselves are set in motion by the opening and closing of the lid of the toilet. The overflow, a harmless effluent, passes to a cesspool and is absorbed by the subsoil.

ice, one softening the water while the other is being regenerated for further usefulness.

Overdosing the water does not produce any harmful effluent, no matter how soft the water may be. In consequence there is no need for watchfulness in this regard. In fact the rule is to overdose the water so that water of zero hardness may be produced. With hydrate of lime or soda ash a certain degree of hardness still remains in the water, because the bodies resulting from the reactions are themselves soluble in water and because colloids form which refuse to settle.

Another advantage is that permutit forms no sludge. In consequence the effluent does not need to be held for sedimentation and no sludge has to be discharged. Yet another quality of value is the rapidity with which the zeolite works. Permutit is said to do in 10 minutes what would take an ordinary reagent four hours to perform when cold. Thus the volume of water under treatment at any one time can be greatly reduced with reduction in the size of the treatment tanks. Pumps may not be needed, as the permutit treatment tanks are connected under pressure with the line and do their feeding under the line head.

All of which seems like a record of perfection. There is a drawback, however. Though the zeolite is never discharged it has to be regenerated with salt, which though cheap is not obtainable without expense. The lime treatment is only half as costly as the zeolite for temporary hardness. On the other hand, the soda-ash treatment is twice as expensive as the zeolite where the hardness is permanent. Viewed in that way where the hardness is half temporary and half permanent the zeolite treatment is just about as expensive as the combined lime and soda-ash treatment, chemically considered. However, the reduction in tank size and the absence of sludge is in favor of the permutit, and a further benefit is found in the fact that the water is softened to a zero hardness and does not contain any excess reagent or any soluble products from the reaction. Still, permutit, though the preferable as a softener of permanent hardness, cannot compete in cost with lime as a means of removing temporary hardness. Therefore the best practice is often to use lime for the latter and permutit for the former. Whether to do so is a matter for expert determination.

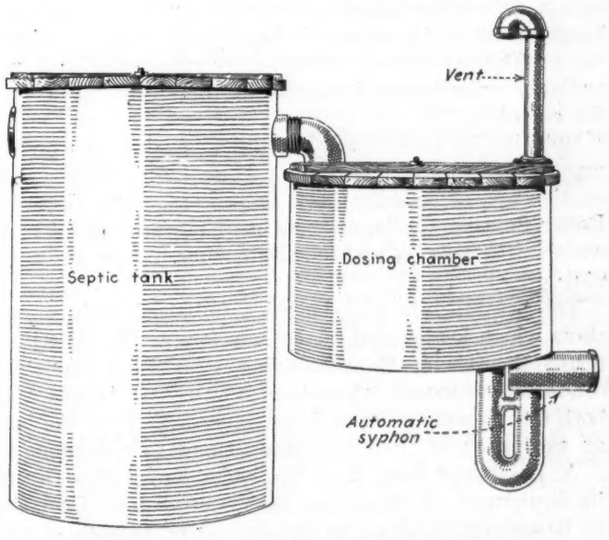


SIMPLER MEANS OF PURIFYING SEWAGE

The fecal matter falls into a tank above the floor level, is digested by the fluid contained therein and overflows through a pipe to a barrel drilled with holes. The purified fluid passes into the subsoil.

The Kaustine Co., Inc., exhibited its line of sanitary products and here it may be said that one cannot be favorably impressed with the sanitary conditions in mining villages with the houses perched often above one another and sewage seeping down from the imperfect vaults now in general constructed. The evil is perhaps not painfully apparent. It takes a medical man to realize it. There has been little objection made by the residents of mining villages, though they are the persons subjected to the evil effects just described. Still, many mine operators have sensed the dangers of seepage and flies and wondered whether they could not make their village more typhoid-proof.

I am told that the owners of many mining plants in West Virginia are not only aware of the danger but are



WHERE MUCH SEWAGE IS TO BE TREATED

A septic tank is used first. In this no chemical is used. The microbes which work in the unaërated fluid below the scum that forms in this tank rapidly purify the sewage. The much-modified sewage overflows from this tank into the dosing chamber, where the assurance of complete purification is made doubly sure. It is discharged from this chamber discontinuously by an automatic syphon.

ridding themselves of it. In the issue of *Coal Age* of Sept. 14 was a description of a convenience in the mines of the Ford Collieries Co. whereby the fecal matter was rendered not only innocuous but truly fluid by the use of a chemical. This outfit was furnished by the Kaustine Co. J. L. Murphy informs me that commercial caustic soda is not the only ingredient in the preparation used as a disinfectant, deodorant and digestant of this fecal matter but that, in order to make the action more rapid, many other ingredients are used and the strength greatly exceeds that—3 per cent—mentioned by Dr. R. R. Sayers as competent to perform the work demanded. Mr. Murphy says that as rapidity in operation is desirable, dosages are applied greater than those which if given plenty of time will do the work effectually.

The illustrations herewith do not include the plumbing with its ventilation pipe and in some cases as shown there is no plumbing; only iron parts are provided, with an iron lid, as shown in one illustration. It has been found that porcelain parts fare but ill in some of the residences and even in the bathhouses around the mines.

All the illustrations shown are for single units, but multiple units are provided where these are desirable for schools, stores, bathhouses, churches, assembly rooms, clubhouses and like places.

Caustic soda has a disastrous effect on galvanized vessels, so these are made of Armco iron, which is 99.84 per cent pure. This is covered with an enamel that is unaffected, it is said, by acids, alkalies or the elements. The top of the tank is fitted with a revolving trap which serves to keep the tank reasonably tight, but the nature of the contents after mastication by the caustic soda renders this quality less necessary. In one illustration will be seen the agitating paddles which are set in motion automatically by the closing of the lid. Where sewers are laid throughout the village and the sewage is conducted to a central point septic tanks are used instead of chemical tanks.

The Egyptian Iron Works exhibited an eccentric having instead of the usual eye a self-oiling ball. This eccentric is intended for use with shaker screens. With such a connection between the shaft and the screen no harm results if the eccentric bearings are not in alignment. The ball forms a joint so truly universal that no ordinary misalignment can bring improper stress on the eccentric.

Both the Hyatt and Timken roller bearings were well represented in the Huntington show both directly and in the use of bearings for mine cars. The Timken Roller Bearing Co. lays stress on the ability to take up wear in the bearings while eliminating that in the running gear.

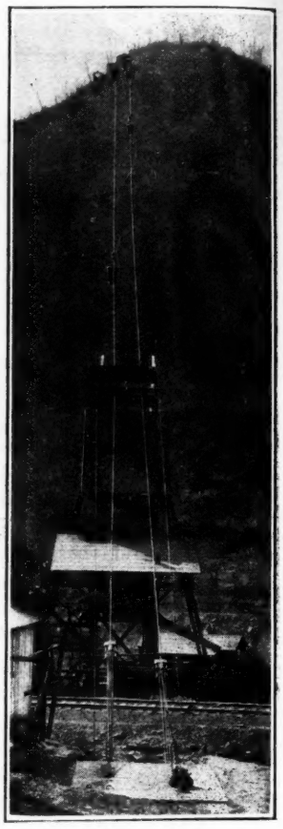
The Joy Machine Co. showed a full-sized loading machine which loaded coal all the day long. The Westinghouse Electric & Manufacturing Co. had a bar-steel conductor-cable-reel locomotive running on trucks and both the Westinghouse and the General Electric Co. had an exhibition of their automatic substation equipment.

A. Leschen & Sons Rope Co. had a model illustrating its equipment at the mines of the Bradshaw Coal Co. at Bradshaw, W. Va., on the Dry Fork Branch of the Norfolk & Western R.R. The coal is 600 ft. above the railroad, and the point nearest the railroad is 1,200 ft. distant therefrom. This company had been using a surface incline to reach the bottom of the hill and mules to haul the cars over the Dry Fork of the Tug River. The rope is supported only at the ends and it has a rated capacity of 125 tons per hour, or 1,000 tons per day of eight hours. However, one man can readily lower 50 per cent more and do it safely. The span is 1,320 ft. and the fall 580 ft., the cost for operation being approximately 1c. per ton.

TIPPLE AT THE STATION, BRADSHAW, W. VA.

The coal is brought in a bucket from a point 600 ft. above the railroad and automatically dumped into the chute at the foot of the incline, one man controlling the passage of the bucket down the hill.

The R. D. Nuttall Co. had a booth where were displayed the helical gear reduction units by which continuity of contact, reduction of noise and vibration are attained. With such a gear the load is transferred from the pinion teeth to the gear teeth progressively, gradually and without shock regardless of how badly they are worn. They do not drive by a series of impacts, as is inherently the case when an ordinary pinion drives a spur gear. It is asserted that the wear being uniform permits a new pinion to be applied to a worn gear with satisfactory results. Compared with ordinary spur gearing the teeth have a greater rolling contact and are provided with a large quantity of metal at their roots. Unlike a herringbone gear the pinion can float across the main gear without injury. These gears are suited for many purposes, among them for driving hoists and pumps. At the Carnegie Coal Co.'s plant at Atlasburg, Pa., a helical gear of this kind has been installed for driving a 12-ft. exhaust mine fan, replacing the steam drive.



ANOTHER VIEW OF ROPEWAY

Only two buckets are used, one going up while the other goes down. Rope incline handles 1,000 tons in 8-hour day.

The Nuttall firm also showed a trolley and pole head for holding it. This trolley is provided with a centering spring that brings the wheel back to its normal position. Instead of the pole head covering the sides of the pole it covers the top and bottom. In consequence when the trolley escapes from the trolley wire and hits against an offset in the roof or on the edges of cross beams, the blow falls on the steel fork and not against the wood of the pole. This prevents it from being shattered. The cable is firmly clamped to a grooved plate, using bolts instead of set screws. The motorman is almost sure to have a wrench with which he can tighten up the connection should that be necessary, yet is quite likely not to be provided with the wherewithal to tighten setscrews where these are used to clamp the connections to the trolley-pole head.

AT THE PITTSBURGH (PA.) experiment station of the U. S. Bureau of Mines, J. D. Davis, fuels chemist, and J. F. Byrne, research fellow, Carnegie Institute of Technology, have investigated the relative tendency of Pennsylvania coals to ignite spontaneously. The research consisted largely in the development of methods for the determination of the comparative sensitivity of coals to oxygen.

Problems of Operating Men

Edited by James T. Beard

Where Coal-Mining Practice Could Be Materially Improved

Examination Started Too Long Before Men Enter the Mine for Work—Practice in the North of England —Economy in Handling Coal at the Working Face

BORN in England and starting work at the early age of 13 years, for ten years I labored there as a miner's helper and doing various kinds of work about the mine, before deciding to come to this country.

Looking back over that early experience in England and judging it by what I have seen in American mines, I find there is much to be learned by way of comparison. In the fifteen years that have passed since I came to America, I have worked in many coal mines from southern Illinois to British Columbia. During that time, my eyes have not been closed to what has been going on about me and I find that many lessons can be learned through close observation and comparison of the means and methods employed in different localities.

Firebosses Start Examination Too Long Before Men Enter Mine

It was reading the numerous letters that have appeared in *Coal Age*, regarding the fireboss' identification mark, that leads me to offer a few comments on this work. I am deeply impressed with one fact; namely, in the large majority of cases, the fireboss starts his examination too long before the time for the men to enter the mine for work.

In Illinois, it was a common thing for a fireboss to start his examination eight hours before the beginning of the morning shift. I found that this was wholly in compliance with the coal mining laws of the state, where the mine examiner is required (Sec. 21) to examine the underground workings of the mine within eight hours preceding the time the dayshift goes on duty.

Let us assume, for example, that a fireboss begins, say at 1 a.m., to examine a section of a mine in his charge. In his examination, we will suppose that he finds a small quantity of gas in several of the places, but not sufficient to render work in those places dangerous.

Now, we will assume that a big cave takes place on the intake or return airway of that split, after the fireboss has completed his examination. As a result, the circulation is choked and gas accumulates in the section. Believing everything to be safe, the men are admitted to the mine and proceed to their several places. It is nothing strange that conditions such as these bring calamity.

At other times and places where the fireboss starts his examination only two hours previous to the entrance of the miners for work, I have known of places that were found to be clear of gas at the time the examination was made; but a cave occurring a little later would knock down a brattice and short-circuit the air, allowing gas to accumulate at the face in a very short time.

Booster Fans Installed in Mines, Menace to Safety

Again, I have observed gaseous places that were hard to ventilate and required a small blower or booster fan to keep them clear of gas. Let me ask, Who knows when the belt driving such a booster is going to slip or break; or when a cave will tear down the wire that conducts the power to operate the fan? Either is liable to occur at any time and the fan be put out of commission.

In some localities, bumps are frequent, causing roof falls that destroy brattices and short-circuit the air. This may take place at a time between the examination by the fireboss and the entering of the men for work.

Practice in North of England

Allow me just here, to refer to practice in the North of England, where the firebosses enter the mine only an hour previous to the beginning of the miners' shift. The mine manager is at the shaft bottom to receive the firebosses and give them any orders that might chance to be left by the night-shift overman.

The examination by the firebosses being completed, if everything is reported safe for work, the men are checked in, each miner being given a safety lamp before he leaves the shaft bottom. Every lamp has been examined and locked and often the men are searched for matches before being permitted to enter the mine.

It goes pretty hard with a man who is caught with matches on his person. The officials are sure to make an example of him, by imposing a fine or hailing him to court for imprisonment. At the entrance of each section, the fireboss in charge awaits his men and there is no chance for a man to enter his place when it has been found to be in an unsafe condition for work.

When a fireboss has admitted his men to their respective places, he devotes the balance of the shift to a careful examination of the shots and timbering, in each working place. All shots must be properly mined and tamped before they can be fired.

Improvements in Loading Coal Adopted in Montana Mine

I was pleased to note a reference made in *Coal Age*, Aug. 24, p. 288, to the improved method of loading coal at the working face, as adopted by the Keene mine management, at Roundup, Mont. It appears that the company have been studying more economical methods of mining and handling the coal at the working faces, in the rooms.

The plan adopted of standing from three to five cars at the face of a room, the cars to be loaded at one time, will expedite the work and reduce the cost of gathering cars in the workings. The new plan, no doubt, calls for an investment of several hundred dollars for extra mine cars; but this expense will be more than offset by the reduced cost of operation.

Coal-Face Conveyor System

In the mining of a seam of low coal overlaid with a good roof, allow me to suggest that there is much economy in the use of a conveyor system laid parallel to the coal face. Such a conveyor, operated by a small electric motor, will afford easy loading all along the face and will be found a profitable investment.

Not the least of the advantages of a conveyor system at the working face is the fact that little or no brushing of the roof is necessary. As the conveyor works along the floor, miners can load commercial coal with the greatest ease. A chunk of coal that requires two men to roll it onto the conveyor will generally be carried along without further trouble.

A conveyor system of this kind is generally protected by a series of cribs. As the face is advanced and the conveyor line shifted forward, new cribs are built and the old ones removed, allowing the standing area to cave. Whether a conveyor is installed or a track is laid along the face of the coal, there is provided an ideal longwall system that will prove a source of great

economy in the operation of the mine and reduce the cost of production, which is a most important item in present-day mining.

In a pamphlet just received from England, I read that a large coal company offered a prize for the best solution of the question: "What is the most important job on the colliery?" While we are told that the judges decided that the general manager held the most important position at a coal mine, my own opinion is that the position of the fireboss is more important than that of any other mine official. It would be interesting if *Coal Age* readers would discuss this question, giving their ideas of the relative importance of mine officials.

Kemmerer, Wyo. WILLIAM ALLAN.

Steel Guides and Buntons in Mine Shafts

Steel cage guides and shaft buntons in use in Europe fifty years ago—Description of modern Belgian coal shaft in Campine region.

IN DESCRIBING the equipment of the Rosedale Shafts, in *Coal Age*, Sept. 7, p. 351, George A. Richardson appears to be under the impression that the use of steel rails as cage guides, in these shafts, is something novel. He calls it a "revolutionary development."

As a matter of fact, steel rails have been used as guides, in the deeper coal shafts of the European continent, ever since such rails have been rolled commercially, and that is, since the early stages of the Bessemer-process development, which would put us back fifty years, or say to the seventies.

But, even before that time, when railroads were using iron rails they were using rails as cage guides in Belgium. In the sixties, Alphonse Briart, a famous Belgian mining man of those days, replaced with iron rails the wooden guides in all the hoisting shafts of the Mariemont-Bascoup Collieries. There were eight or nine of those shafts, some of which were deeper than 1,600 ft.

USE OF IRON RAILS AS SHAFT GUIDES FIFTY YEARS AGO

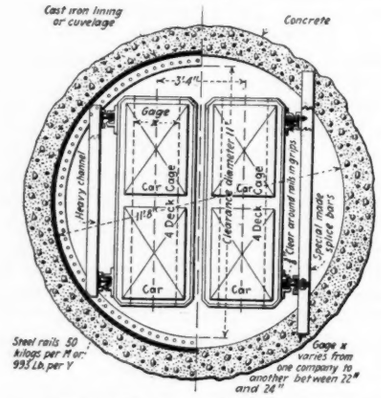
From the beginning, Mr. Briart made use of the heaviest rails procurable. At that time, two kinds of rails were being manufactured, currently, on the continent: the flanged rail with which we are familiar in this country and the two-headed type, which still survives in the British Isles. Mr. Briart used the former as cage guides, while the latter, placed on edge, served as buntons. More than half a century ago, therefore, rails were not only used as guides, but for buntons as well.

That mining men had their doubts about safety catches being effective on iron guides is proved by a certain amount of literature that found its way into the publications of the Mons Engineering Society. However, it was soon demonstrated by tests that catches not only stopped a cage more promptly on iron guides than on wooden ones, but did it without damaging them. The same kind of catches, acting on wooden rails, always slipped down on them for quite a number of feet, furrowing them terribly and making them unfit for further use.

TESTS PROVE STEEL GUIDES MORE EFFECTIVE THAN WOOD

During the seventies, when steel rails became available on the continent, they were employed as guides in preference to iron; and it was then very promptly and conclusively demonstrated that all the types of safety catches in use were as effective on steel as on iron.

In the accompanying sketch (Fig. 1) I have shown how steel guides were

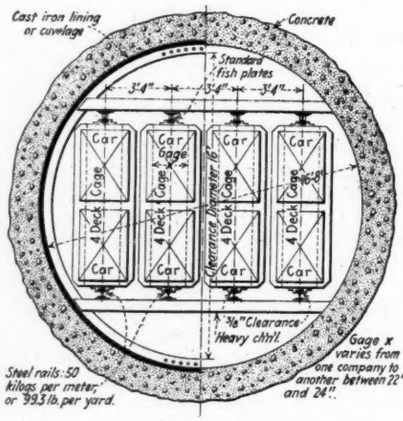


Cross-Section of Belgian Shaft Showing Steel Guides

sometimes installed in deep shafts, at the time when I gained my mining experience in Belgium, in the early nineties. The drawing is made from memory and the dimensions given are the only ones I am able to remember definitely.

HEAVIEST RAILS USED FOR GUIDES

In 1890, shafts 3,000 ft. deep were quite numerous in Belgium; and there were a few, in regular operation, at



Modern Belgian Shaft in the Campine Region

depths much greater than this. All of these were provided with steel guides and steel buntons. Nothing but the heaviest rails procurable were employed. The 50-kilog.-per-meter rail (99.3 lb. per yd.) has been manufactured continuously in Belgium ever since the late eighties.

The buntons shown in Fig. 1 were, I think, 30-cm. (12-in.) channels. I am certain they were not less than 25 cm. (10 in.). There was nothing cheap about such work. There could not be, considering the speed with which hoisting had to be done, in order to reach outputs of 800 or 900 tons, in eight hours, from shafts 2,500 or 3,000 ft. deep. Hoisting speeds of 10 m. (about 33 ft.) a second were then reached. Today, they hoist at speeds even greater than this, say 19 m. (about 61 ft.) a second being often maintained during 65 per cent of the hoisting operation.

DETAILS OF A MODERN SHAFT IN THE BELGIAN CAMPINE REGION

In Fig. 2 I have shown how a modern Belgian coal shaft is equipped. The example I have selected here is a shaft in the Campine region. I was in that shaft recently. There are two pairs of four-deck cages and two hoisting engines. Each cage-deck carries two cars. The dimensions given are the only ones I have noted, besides the following data:

This shaft is 2,350 ft. deep. The eight cars hoisted in a cage contain a total of 4.8 gross tons of coal. The cars themselves together weigh 2.4 tons. A cage weighs 4.5 tons. The rope hanging in the shaft weighs 6.6 tons. The total weight hoisted is, therefore, 18.3 gross tons.

As is usual in Belgium, this shaft is lined with cast iron, besides being concreted all around as indicated in the figure. The cast-iron lining, in this case, is 220 m. high (700 ft.), because of a corresponding thickness of quicksand which had to be frozen before the shaft could be sunk. The same sinking process has been used for all the shafts of the Campine region, on account of this quicksand formation, which is nearly constant over that part of Belgium.

While I was there, the double hoisting outfit, shown in Fig. 2, made seventy-six hoists, bringing to the surface 608 cars and 364 tons of coal in one hour, from a depth of 2,350 ft. I was told that this was less than the record, which then stood at 5,056 cars and 3,034 tons of coal, in a day of eight hours; or at the rate of 632 cars and 379 tons of coal per hour.

New York City. F. C. CORNET.

Driving Wide Rooms

Loading contest shows record output, per man, per day—Influence of width of rooms on output — Discussion asked.

IN THE issue of *Coal Age*, Aug. 10, p. 216, is given an account of the results of a loading contest that took place between two mines of the Standard Island Creek Coal Co., located at Cora and Taplin, W. Va., respectively.

The account gives the average daily output of two men, working at these

respective mines, as being 50.5 tons of coal, per shift, in the one case, and 45.9 tons, per shift, in the other; or, practically, the capacity of a 50-ton railroad car, per day, for each man.

This is a record output for a miner working in 4-ft. coal and drilling, shooting and loading his own coal without assistance. It is stated that one of these men was working in a double-track room, 36 ft. wide, while the other was driving two places, each 18 ft. wide.

Reading this account interested me, particularly as I have lately been endeavoring to convince our foreman at Coral, Indiana County, Pa., that he should widen his rooms from 20 to 36 or 40 ft., believing as I do that this would increase the daily tonnage, per man.

We are working coal 78 in. thick and overlaid with from 200 to 390 ft of cover. The seam which is the upper Freeport seam and is very soft, consists of 26 in. of top coal and 42 in. of bottom coal, separated by 10 in. of binder. The roof is mostly sandrock and taking the mine as a whole, it is considered very good. Occasionally, we strike a "cutter," where the roof will cut or shear from 3 to 10 ft. The floor of the seam is solid and very regular.

I would like to have the question discussed as to what influence, if any, the width of rooms have on the possible daily output, per man. It would be interesting to hear from some of the men of the Standard Island Creek Coal Co., on this question, giving their roof conditions and other data that would bear on the subject.

L. F. KLINGENSMITH,
Potter Coal & Coke Co.
Greensburg, Pa.

Inquiries Of General Interest

Triple-Compartment Hoisting and Airshaft

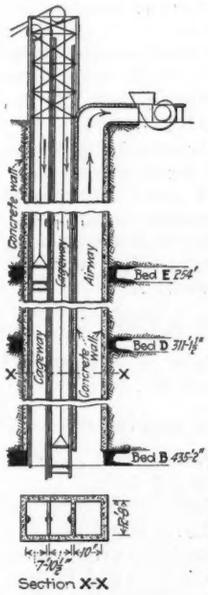
Double Compartment Hoistway and Airshaft Combined—Effect of Movement of Cages on Circulation of Air—Suggestions Regarding Design of Shaft and Its Equipment

HAVING in contemplation the sinking of an airshaft, at a point some distance in advance of our present workings and desiring to design and equip this shaft in a manner that it can be used as the main hoisting shaft, at some later time when the underground development has proceeded to an extent to make that advisable, we solicit the advice of *Coal Age* and its practical readers, in hopes of gaining information that will enable us to avoid mistakes that might otherwise be made.

In order to make clear the situation, I have prepared the accompanying sketch showing the cross-section of the proposed shaft, and outlining the headframe and hoisting sheaves above the shaft, together with the fan and fan drift connecting with the air compartment of the shaft. Below the sectional elevation is shown a plan of the shaft with its three compartments, comprising two hoistways for the cages and an air compartment in one end of the shaft.

As indicated by the arrows, the two hoistways are made the downcast and the air compartment is then the upcast for the mine, the fan being operated as an exhaust fan. In accordance with our best practice, the fan is set back from the shaft a short distance, as a safeguard against its possible destruction by the blast of an explosion, should one occur in the mine.

The shaft is to be lined with concrete throughout its entire depth and a 12-in., reinforced concrete curtain wall will separate the air compartment from the hoistway adjoining it. This curtain wall will extend from the top to the bottom of the shaft, thus providing separate intake and return airways in the shaft.



SECTIONAL PLAN AND ELEVATION OF SHAFT

It is assumed that the ultimate quantity of air circulating in the mine and passing through this shaft will be 200,000 cu.ft. per min. It is the intention to operate the cages at a maximum speed of 900 ft. per min. Briefly stated, this shaft will serve the following purposes: 1. Ventilation. 2. Hoisting and lowering men and supplies, and hoisting coal and rock from the mine.

As shown in the sketch, there are three beds of coal cut by the shaft; namely, beds, *B*, *D* and *E*. Hoisting operations will include the following: (a) Lowering supplies from the surface to the several levels, *E*, *D*, *B*. (b) Hoisting coal and rock from bed *B* to the surface. (c) Lowering coal from the two upper levels to bed *B*. (d) Hoisting and lowering men working in the several levels.

Having made this explanation, I would like to ask three questions, as follows: What effect will the presence of one of the cages at either of the upper levels have on the circulation of air in the hoisting compartment? 2. What effect will the travel of the cages up and down the shaft have on the air in the hoisting compartment? 3. What suggestion has any one to offer in the matter of design of the shaft with a view to realizing the most satisfactory result from a ventilating standpoint?

It should be further stated that of the 200,000 cu.ft. of air, which is the proposed maximum circulation that will pass through the shaft, 150,000 cu.ft. will be required in the lowermost seam, Bed *B*, while the remaining 50,000 cu.ft. will circulate in the two upper levels, Beds *D* and *E*. I trust that this will make the proposition clear to all and hope for many good suggestions.

———, Pa. Chief Engineer.

This is an interesting proposition that we are glad to present to the practical readers of *Coal Age*, knowing that they will respond by giving many helpful suggestions respecting the design and equipment of this shaft, having in view the most economical and satisfactory results in its operation. By way of opening the discussion, we offer the following brief suggestions:

First, it is not assumed that this shaft is sunk so far in advance of the present working face in the old mine, but that connection with those workings will quickly provide a way of escape in case of accident in the new shaft, which would be necessary to comply with the Pennsylvania mine law.

While it is a common practice to sink a triple-compartment shaft, providing a double-compartment hoistway and airshaft combined in one, there are serious objections to this plan. First, and chief of all, is the fact that an accident occurring in the shaft endangers the circulation of air in the mine.

It is true that, in this case, a 12-in., reinforced-concrete curtain wall separates the airway from the hoistways. But it is a question whether this curtain wall would withstand the terrible force of an explosion in the mine should one occur. In our judgment, a far better arrangement would be to sink two separate shafts, making one a hoisting shaft and using the other exclusively as an airshaft and escapeway in the later operation of the mine.

Answering the question regarding the effect on the air due to one cage being at the upper level and practically closing that compartment of the shaft to the free passage of air; or the effect on the air due to the travel of the two cages up and down the shaft, our experience has been that neither of these conditions have any very material effect

on the circulation of air in the mine, providing the partition dividing the two hoistways is an open one, consisting of cross-buntons at intervals, for the support of the cage guides.

In this connection it should be remembered that, as one cage is ascending, the other is descending the shaft and the ultimate effect is only to churn the air from one side of the shaft to the other. Except in a small opening and a limited development of the mine, the movements of the cages or their presence in the shaft will produce a hardly perceptible effect on the circulation of air in the mine. The floor of each cage, however, should be built so as to permit the passage of air through them and the cages should not fit tight in the shaft, but a clearance of 3 in. at each end and 6 or 8 in. on each side of each cage should be provided.

In order to obtain the required division of the main air current, regulators will have to be placed in the two upper seams *D* and *E*, which would naturally take the larger proportion of the air, unless the current is thus restricted in them. We hope this question will be fully discussed from every angle by readers of *Coal Age*.

Examination Questions Answered

Kentucky Mine Foremen's Examination, Lexington, May 30, 1922

(*Selected Second-Class Questions*)

QUESTION — *Explain how natural ventilation in a mine is affected by the change of seasons.*

ANSWER—In the winter season, the outside temperature is generally lower than that of the mine and the cooler intake air, being heavier than the warm return current, an air column is produced that assists the circulation of the air produced by the ventilator.

Again, in the summer season, the outside temperature is generally higher than that of the mine. The result is, then, that the warmer intake air, being lighter than that of the mine, an air column is produced that opposes the circulation produced by the fan.

In general, therefore, a mine is more easily ventilated in the winter than in the summer season.

QUESTION—*What method would you adopt to have a continuous flow of air past the face of each working place?*

ANSWER—In the first place, a reliable means of producing the circulation of air in the mine must be adopted. Again, the air must be carried forward by means of well built stoppings, doors, air bridges and brattices, so that it will be made to sweep the face of the coal, in each working place. Frequent inspection of these appliances is necessary to keep them in good condition, such as to insure a continuous flow of air in the workings.

QUESTION—*What are the general requirements in regard to the distribution of air in mines, and what must be done when the current is seriously interrupted?*

ANSWER—The main intake air current must be divided into two or more splits and the quantity of air passing in each split must be proportioned to the need therein. The number of splits must be sufficient to comply with the requirements of the mining law, so that the number of men working on a single split will not exceed what the law allows.

Should the air current be seriously interrupted, the men must be promptly notified and withdrawn from the mine. They must not be permitted to return, until the trouble has been removed and the mine examined and found safe for work.

QUESTION—*If the velocity of an air current is 725 ft. per min., in an airway 6½ x 8½ ft., what is the quantity of air passing per minute?*

ANSWER—The sectional area of this airway is $6.5 \times 8.5 = 55.25$ sq.ft. The quantity of air passing is then $725 \times 55.25 = 40{,}056+$ cu.ft. per min.

QUESTION—*Find the ventilating pressure in a mine when the downcast temperature is 60 deg. F., and the upcast 200 deg. F., the barometer being 30 in. The depth of both shafts is 300 ft.*

ANSWER—The weight of 1 cu.ft. of air in the downcast shaft is

$$\frac{1.3273 \times 30}{460 + 60} = 0.07657 \text{ lb.}$$

Likewise, the weight of 1 cu.ft. of air in the upcast shaft is

$$\frac{1.3273 \times 30}{460 + 200} = 0.06033 \text{ lb.}$$

Therefore, the difference of pressure, for a single foot of depth in this shaft is $0.07657 - 0.06033 = 0.01624$ lb. The depth of both shafts being 300 ft., the unit of ventilating pressure, in this case, is $300 \times 0.01624 = 4.872$ lb. per sq.ft. To find the ventilating pressure, or the pressure producing circulation in this mine, it would be necessary to know the sectional area of the airway, which is not given.

QUESTION—*What is meant by absolute pressure?*

ANSWER—The term "absolute pressure" describes the total pressure exerted on the air, which includes the atmospheric pressure (14.7 lb. per sq.in., sea level) and any additional pressure due a ventilator. The latter may be either positive or negative, according as the fan is blowing or exhausting air from the mine.

QUESTION—(*a*) *What is meant by ventilating pressure, in mine ventilation?* (*b*) *What is the unit of ventilating pressure?*

ANSWER—(a) The ventilating pressure, in mine ventilation, is the total pressure producing the circulation of air, in a mine. It is equal to the mine resistance, and is the difference of pressure between the intake and return airways.

(b) The unit of ventilating pressure is the pressure per square foot of sectional area in the airway or fan drift. It is found by dividing the ventilating pressure or mine resistance by the number of square feet in the sectional area of the airway. While the ventilating pressure is expressed in pounds, the unit of ventilating pressure is expressed in pounds per square foot. The unit of ventilating pressure is sometimes expressed as "ounces per square inch," 1 oz. per sq.in. being equal to 9 lb. per sq.ft.

QUESTION—*Explain the difference between ventilating pressure and absolute pressure.*

ANSWER—Ventilating pressure is the difference between the pressure on the air in the intake airway of a mine and that on the return air, in the same mine. It is this difference of pressure that produces the circulation in the mine.

QUESTION—*An airway, 16.7 ft. wide and 8.9 ft. high is passing 65,000 cu.ft. of air per minute. What is the velocity of the air current?*

ANSWER—The sectional area of this airway is $16.7 \times 8.9 = 148.63$ sq.ft. The velocity of the air current is then $65{,}000 \div 148.63 = 437.3$ ft. per min.

QUESTION—*If powder smoke requires 2 min. and 17 sec. to travel 149 yd., in an airway 10 x 12 ft. in section, what quantity of air is passing in the airway?*

ANSWER—The time, 2 min. 17 sec., is 137 sec.; and 149 yd. is $3 \times 149 = 447$ ft. The velocity of the air indicated by this observation is, therefore, $60(447 \div 137) = 195.76$ ft. per min. The sectional area of the airway is $10 \times 12 = 120$ sq.ft. The quantity of air passing in this airway is, therefore, $120 \times 195.76 = 23{,}491+$ cu.ft. per min.

QUESTION—*With a pressure, at sea level, of 14.7 lb. per sq.in., and the barometer 30 in., how far can you set a pump above the surface of the water, vertically, and not use rods for pumping? Show by example.*

ANSWER—The theoretical height of water column supported by an air pressure of 14.7 lb. per sq.in. is, $14.7 \div 0.434 =$ say, 34 ft. Owing to friction and leakage of valves, it is safe pumping practice to make the vertical height of the pump, above the surface of the water in the sump, not to exceed nine-tenths of the barometric pressure; or, in this case, $0.9 \times 30 = 27$ ft.

Seven-Hour Day Causes Increase of £30,000,000 a Year In Production Cost of British Coal

By C. H. S. Tupholme

A great deal of publicity has been given to the subject of miners' wages in Great Britain. There are other branches of productive activity in Great Britain, however, in which unemployment and short time are so prevalent and earnings so low that a great percentage of employees are compelled to subsist for long periods on the "dole." The latest official figures show that in such great industries as iron and steel, shipbuilding, and engineering, unemployment is much greater and employment itself more broken and irregular than in the coal-mining industry.

In considering the position of the British miner it is necessary to realize that even in these days of industrial depression he enjoys privileges denied to other workers. Relatively his lot is little worse—in some cases it is distinctly better—than that of workers in certain other trades —railwaymen and municipal workers excluded.

It is a popular assumption that miners are in receipt of wages only 20 per cent above those paid up to the period immediately preceding the war. This is a misconception. The average earnings of miners throughout the country work out at approximately 45 per cent more than the pre-war scale. Piece workers are allowed 14 per cent more than their old rates to enable them to earn as much in a working day of seven hours as they formerly did in one of eight. The miner also is privileged in respect to housing and fuel. At a time when accommodation is still difficult to obtain many miners pay nothing for their dwellings, or receive an allowance in lieu of rent. House coal, which is a fairly substantial item in the miners' domestic economy, is given to them either free of charge or at a price which litt'e more than covers the cost of cartage. These two items have to be taken into account in considering the miner's position in comparison with that of his co-workers in other callings.

Leaders Allege That Miners' Earnings Are Too Low

The miners' leaders fully recognize that wages absorb the vast bulk of the proceeds from the industry, leaving the owners with a profit much less than the minimum provided for them in the terms of settlement of June, 1921. Nevertheless they persist in the claim that the earnings of the mine workers are below the "subsistence level" and need augmentation.

They now propose that the owners so raise prices to the general body of consumers as to provide a sufficient revenue from the sale of coal to afford the miners what they deem a living wage. This can on'y mean that there be some sort of selling combination by which coal prices shall be maintained at an artificial level. The principle is one diametrically opposed to the present methods and to the traditions of the mining industry, which before the war provided cheap as well as abundant coal. In other words, it is proposed to substitute for healthy competition a system of trustification entirely alien to the traditions of British commerce.

This expedient is likely to find little favor in the eyes of the consumer. It is directed to the same end as the proposal for a government subsidy—viz., the placing of a further burden on the community to extract an uneconomically high wage for the miner at a time when every section of the public is handicapped by high prices and overtaxation. The principle is vicious, since it is certain that if it were once admitted its application would be invoked by all other workers who considered themselves inadequately remunerated. But it is not the domestic consumer alone who would be affected by such a scheme. The great staple industries of the country—iron and steel, engineering, textiles and the railways—in paying more for their coal would find their working costs so increased as to necessitate restricted operations. The cost of living would again bound up, trade depression would become intensified, and there would be a great increase in unemployment.

One of the most serious effects of any arbitrary regulation of selling prices would be the crippling of overseas trade. The coal industry experienced the disastrous effects of foreign competition during and immediately subsequent to the period of coal control. If an artificial price is to be substituted for the open market price in international trade, nothing is more certain than the re-entry of competitors, and much, if not all, of the good effected during the past twelve or fifteen months will be undone.

It is vital that the industry should not carry a personnel in excess of its strict requirements, while it is equally necessary that every man employed should do a fair day's work. The introduction of the seven-hour day at a time when a return from artificial to economic conditions was foreshadowed was a measure which could not have been recommended had its advocates foreseen results. During this period of bad trade and uneasy markets, co-operation and solid, hard work have been more necessary than at any time in the annals of the coal trade.

The statutory reduction of working hours has had the effect of increasing the costs of production to an extent which has left its mark on the whole trade. This measure has necessitated the employment of large numbers of extra day-workers, and at the same time it has added to the cost of piece work in wages by 14 per cent. Wallace Thornycroft and other authorities upon coal-mining matters variously estimate the increased production cost due to the act at from 2s. to 2s. 6d. per ton. At the present rate of output this saving would produce about £30,000,000 in a twelvemonth, of which 83 per cent would be available as a supplement to mine workers' wages under the terms of the existing agreement.

While the relations existing between the mine owners and their work people are by no means unsatisfactory, it is obvious that much benefit would be derived by closer co-operation between the two parties. The employers are anxious to restore the industry to economic hea'th and feel that if the men's accredited spokesmen take the long view and join with them in their efforts to this end, the most serious obstacles would be overcome. There are some factors, such as the exchanges and conditions abroad, which are outside the control of the industry; but others are amenable to control, and if these are approached in the spirit of conciliation much can be done to make the position of the trade more tolerable.

The deliberations of the National Coal Board will have proved valuable if they merely serve to elucidate the truth that better times for the miner and the industry generally are not to be obtained by schemes which are economically unsound and socially undesirable.

U. M. W. International Board Takes Steps To Restore Kansas to Good Standing

Steps to restore the autonomy of the Kansas district, No. 14, United Mine Workers, whose charter was revoked more than a year ago after district officers and a number of members of the district had been expelled from the union, have been taken by the International board of the Mine Workers, which is in session in Indianapolis. A convention of the Kansas district members has been called for Pittsburg, Kan., Oct. 25.

A constitution for the district will be drawn up at the convention and arrangements made for an election of district officers to take the place of the others. The question of reinstatement to membership in the union of Alex Howat and other officers and members of the district who were expelled from the union is to be considered separately. The charter of the Kansas district was revoked and Howat expelled after he had called strikes in violation of contracts.

Preliminary Statistics of Production of Coal in 1921

(Exclusive of product of wagon mines)

Iowa

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees — Underground — Miners, Loaders Etc. (a)	All Others	Surface	Total	Average Days Worked
Adams, Page and Taylor	2,200	23,621	.....	.....	25,821	$102,000	$3.95	60	8	6	74	193
Appanoose	540,191	57,003	12,203	.....	609,397	2,301,000	3.81	2,335	590	273	3,198	92
Boone	152,968	43,179	2,591	.....	198,738	982,000	4.94	371	131	46	548	159
Dallas	299,324	6,618	3,946	.....	309,888	1,195,000	3.86	412	188	55	655	179
Greene, Guthrie and Warren	45,988	9,037	3,067	.....	58,092	212,500	3.66	106	39	20	165	163
Jasper	83,846	16,555	8,009	.....	108,410	431,000	3.98	163	113	41	317	124
Jefferson, Keokuk and Van Buren	2,492	9,078	20	.....	11,590	39,100	3.37	15	7	4	26	201
Lucas	223,420	2,592	10,811	.....	236,823	887,000	3.78	269	125	45	439	211
Mahaska	36,781	9,879	1,091	.....	47,751	171,000	3.58	74	14	10	98	139
Marion	527,561	37,159	18,468	.....	583,188	2,140,000	3.67	699	273	96	1,068	149
Monroe	1,447,902	31,546	39,843	.....	1,519,291	5,501,000	3.62	1,919	783	217	2,919	172
Polk	519,549	213,044	17,758	.....	750,351	3,070,000	4.09	1,017	497	141	1,655	179
Wapello	2,000	47,799	700	.....	50,499	135,000	2.67	66	19	10	95	175
Wayne	7,146	14,355	52	.....	21,553	90,200	4.19	91	28	10	129	127
Totals	3,891,368	521,465	118,559	.....	4,531,392	$17,256,800	$3.81	2,597	2,815	974	11,386	148

Kansas

Cherokee	547,447	9,732	13,422	.....	570,601	$2,047,000	$3.59	533	198	364	1,095	122
Crawford	2,579,878	53,511	79,618	.....	2,713,007	10,515,000	3.88	4,534	1,243	799	6,576	138
Leavenworth	80,817	41,530	11,557	.....	133,904	536,000	4.00	161	45	29	235	205
Linn	4,754	2,605	100	.....	7,459	28,300	3.79	17	9	3	29	118
Osage	37,403	4,070	197	.....	41,670	207,000	4.97	208	43	21	272	133
Totals	3,250,299	111,448	104,894	.....	3,466,641	$13,333,300	$3.85	5,453	1,538	1,216	8,207	137

Kentucky

Eastern District												
Bell	1,648,524	22,600	24,226	.....	1,695,350	$5,068,000	$2.99	2,003	867	569	3,439	135
Boyd	39,506	2,261	963	.....	42,730	93,000	2.18	121	45	49	215	85
Breathitt	143,059	5,878	700	.....	149,637	246,000	1.64	203	81	58	342	142
Carter	65,506	2,353	322	.....	68,181	184,000	2.70	164	47	45	256	125
Clay	150,944	900	1,095	.....	152,939	319,000	2.09	145	53	36	234	159
Floyd	1,122,394	27,822	15,822	.....	1,166,038	2,922,000	2.51	1,557	696	490	2,743	116
Harlan	6,773,233	42,000	34,294	45,992	6,895,519	19,140,000	2.78	4,900	1,784	1,955	8,639	217
Johnson	697,415	13,208	30,527	.....	741,150	2,429,000	3.28	756	308	200	1,264	137
Knox	474,062	12,738	20,891	.....	507,691	1,329,000	2.62	580	261	219	1,060	163
Laurel	88,058	1,970	200	.....	90,228	218,000	2.42	251	26	29	306	188
Lee	31,083	1,760	70	.....	32,913	73,400	2.23	76	37	32	145	88
Letcher	2,424,850	37,060	38,784	.....	2,500,694	7,534,000	3.01	1,967	1,047	687	3,701	140
McCreary	603,440	7,965	441	.....	611,846	1,870,000	3.06	829	338	143	1,310	126
Martin	63,039	956	1,720	.....	65,715	120,000	1.83	64	46	47	157	132
Morgan	27,816	8,143	2,050	.....	38,009	178,000	4.68	120	66	41	227	160
Perry	4,380,147	58,727	1,185	.....	4,440,059	11,386,000	2.56	2,639	1,288	759	4,686	187
Pike	3,067,923	72,048	62,103	115,515	3,317,589	9,238,000	2.78	2,815	1,707	1,256	5,778	134
Whitley	388,583	10,479	25,077	.....	424,139	1,321,000	3.11	721	259	169	1,149	116
Other Counties (b)	30,487	1,500	.....	.....	31,987	69,100	2.16	70	49	28	147	85
Totals	22,220,069	330,368	260,470	161,507	22,972,414	$63,737,500	$2.77	19,981	9,005	6,812	35,798	160
Western District												
Christian & Crittenden	*116,232	1,511	7,603	.....	125,346	$309,100	$2.47	113	31	42	186	207
Daviess	13,160	78,093	1,768	.....	93,021	163,000	1.75	117	38	18	173	202
Hancock	2,296	2,400	.....	.....	4,696	10,000	2.13	14	2	1	17	152
Henderson	256,013	69,763	14,944	.....	340,720	911,000	2.64	337	171	63	571	156
Hopkins	1,822,115	136,269	39,225	.....	1,997,609	4,938,000	2.47	1,806	888	548	3,242	122
McLean	87,168	938	3,200	.....	91,306	195,000	2.14	143	46	22	211	71
Muhlenberg	2,996,142	133,761	94,049	.....	3,223,952	8,109,000	2.52	3,455	1,461	640	5,556	133
Ohio	804,773	22,492	35,920	.....	863,185	2,097,000	2.43	1,014	444	230	1,688	118
Union	757,965	20,249	43,086	.....	821,300	2,042,000	2.49	728	386	188	1,302	150
Webster	1,020,829	6,900	26,992	.....	1,054,721	2,581,000	2.45	1,029	524	224	1,777	125
Totals	7,876,693	472,376	266,787	.....	8,615,856	$21,355,100	$2.48	8,756	3,991	1,976	14,723	131
Totals all Kentucky	30,096,762	802,744	527,257	161,507	31,588,270	$85,092,600	$2.69	28,737	12,996	8,788	50,521	152

Maryland

Allegany	1,426,793	47,736	22,548	.....	1,497,077	$5,526,000	$3.69	2,265	735	552	3,552	136
Garrett	316,917	8,998	4,748	.....	330,663	1,076,000	3.25	699	243	174	1,116	69
Totals	1,743,710	56,734	27,296	.....	1,827,740	$6,602,000	$3.61	2,964	978	726	4,668	120

Michigan

Bay	330,955	2,910	14,630	.....	348,495	$1,729,000	$4.96	445	208	86	739	193
Saginaw	690,019	6,699	49,519	.....	746,237	3,587,000	4.81	807	343	129	1,279	210
Tuscola (c)	37,815	1,745	7,423	.....	46,983	239,000	5.09	94	71	29	194	122
Total	1,058,789	11,354	71,572	.....	1,141,715	$5,555,000	$4.08	1,346	622	244	2,212	196

Missouri

Adair	509,561	8,998	9,245	.....	527,804	$1,659,000	$3.14	663	257	114	1,034	225
Audrain	2,341	8,076	121	.....	10,538	45,500	4.32	34	7	4	45	226
Barton	680,698	6,447	39,202	.....	726,347	2,934,000	4.04	106	22	778	906	107
Bates	37,350	1,120	1,220	.....	39,690	125,000	3.15	51	16	71	138	74
Boone	2,000	14,128	.....	.....	16,128	45,000	2.79	41	11	5	57	179
Caldwell, Clay, Dade and Platte	65,589	23,088	2,969	.....	91,646	372,000	4.06	158	55	20	233	177
Callaway	10,776	19,882	1,533	.....	32,191	130,000	4.04	64	18	34	116	128
Henry	88,025	6,354	900	.....	95,279	327,000	3.43	33	7	95	135	163
Howard, Moniteau and Pettis	2,314	1,630	570	.....	4,514	17,400	3.85	5	1	12	18	66
Grundy and Harrison	3,170	8,177	307	.....	11,654	68,000	5.83	52	5	5	62	159
Johnson	12,969	1,934	337	.....	15,240	50,000	3.28	35	26	9	70	72
Lafayette	491,450	30,153	18,818	.....	540,421	2,316,000	4.29	1,006	480	145	1,631	162
Linn	66,198	22,948	601	.....	89,747	428,000	4.77	177	99	13	289	157
Macon	443,659	20,180	10,146	.....	473,985	1,784,000	3.76	931	219	69	1,219	151
Putnam	11,703	1,138	1,080	.....	13,921	52,000	3.74	55	13	8	76	84
Randolph	306,052	12,711	6,073	.....	324,836	1,274,000	3.92	627	192	52	871	194
Ray	420,402	49,679	6,036	.....	476,117	2,058,000	4.32	979	372	98	1,449	189
Vernon	39,182	2,073	771	.....	42,026	166,000	3.95	94	24	29	147	101
Other Counties (d)	16,057	3,420	60	.....	19,537	64,600	3.31	30	6	23	59	147
Total	3,209,496	242,136	99,989	.....	3,551,621	$13,915,500	$3.92	5,141	1,830	1,584	8,555	166

(a) Includes also shot-firers. (b) Knott, Lawrence and Wayne. (c) Tuscola includes Calhoun County. (d) Chariton, Franklin, Ralls and St. Clair.

Statistics compiled by L. Mann, U. S. Geological Survey, Oct. 14, 1922.

Federal Coal Commission Names Hammond Chairman And Proceeds to Map Out Program

BY PAUL WOOTON
Washington Correspondent of *Coal Age*

The first act of the United States Coal Commission at its initial meeting, Oct. 18, was to designate John Hays Hammond as its chairman. The commission immediately plunged into a discussion of a program for its work. No formal announcement has been made as to how the work will proceed, but certain of its policies already are apparent. It is the intention of the commission to keep the public informed as to each step of its progress. It recognizes that in this way the public will be able to absorb more knowledge as to the problems of the coal industry. The commission recognizes that the only chance that it has to accomplish anything is to obtain public support for its recommendations. It is believed that if the public mind goes through the same processes that the minds of the commissioners will go through, they will be prepared to pass intelligent judgment on the conclusions. Frequently when conclusions constitute the first knowledge that the public has, much time must elapse before their real purport is understood. Thinking takes time. Recognizing that fact, the commission hopes to be able to carry the public along with it as the study progresses.

LEWIS INVITED TO INFORMAL CONFERENCE

The problem is so intricate that the commission expects to call to its aid each subdivision of the coal industry. One of its first acts was to invite into informal conference John L. Lewis, president of the United Mine Workers of America; Alfred M. Ogle, president of the National Coal Association, and S. D. Warriner, a leading anthracite operator, and to ask each to appoint a consulting committee, which is to maintain close contact with the commission and assist it by presenting such facts as may be called for from time to time.

Since E. E. Hunt is secretary of the commission, it is reasonable to suppose that he will resort to much the same form of organization that functioned so successfully during the President's unemployment conference—the plan also used at the conference on limitation of armament. At those conferences advisory committees composed of representatives of the varied interests concerned were used with great success. For instance, an advisory committee on storage would be composed of representatives of coal operators and of large consumers—those most likely to benefit or be interested in storage. This plan, if acceptable to the present commission, would be carried out in such a way that an advisory committee would be formed for each of the important problems within the industry. In this way the commission would be saved a large amount of work and would be furnished with much predigested material.

Since the commission must make its preliminary report on Jan. 15, advantage must be taken of all means to expedite the study. It is probable that the commission will call upon those most concerned to lend it some of their specialists. Only in this way can the commission procure the requisite skill necessary to its work.

Now that the commission is in action an opportunity has been given to judge as to its capability and as to the ability of the individual members to work together. The first sessions indicated that President Harding's mixture of two engineers, two lawyers, two economists, and a newspaper man is less discordant than some critics might expect. Apparently they will work well together. Judge Alschuler gave early evidence that he is experienced not only in weighing evidence but, as shown too in his packing-house experience, is skilled in obtaining evidence for himself.

Mr. Marshall is so well known for his quaint philosophy and his Hoosier directness that sight frequently is lost of the very practical way in which he reasons on problems which come before him. It already is apparent that any policy to win his support must be 100 per cent American. One of his acid tests is whether or not a man puts his American citizenship first.

Dr. Smith brings to the commission not only his own large store of knowledge acquired from having kept abreast with the coal situation day by day for a long period of years but his knowledge of the federal machinery and his acquaintanceship with the government personnel in Washington has made it possible quickly to co-ordinate the commission's work with the coal activities of the various federal departments. This is in direct contrast with the experience of numerous new boards and commissions, where there has been an exasperating loss of time before actual work could start.

Mr. Howell has a wide acquaintance with men and has an accurate knowledge as to the part coal plays in the industrial South. He has demonstrated a keen appreciation of the public's equity in coal.

No one could approach a task better prepared to serve efficiently than Mr. Neill. It has been just twenty years since he began his work with the Roosevelt Anthracite Commission. His connection with the anthracite industry has been almost continuous since. He also brings to the commission a knowledge of transportation, but above all he has a sympathetic understanding of each side of labor disputes.

Mr. Hammond, in addition to his understanding of the engineering phases of the inquiry, has a genius for organization which he is applying actively to the plan for the commission's staff.

An analysis of editorial comment in more than one hundred newspapers reveals that the *New York Call*, a socialist organ, is the only one commenting unfavorably on the personnel selected for the commission.

E. E. Hunt, Coal Commission's Secretary, Has Had Broad Economic Experience

E. E. Hunt, of Springfield, Ohio, has been selected as secretary of the President's coal commission. Mr. Hunt has been in charge of the study of intermittency in the coal industry which the Department of Commerce has been pursuing since last March. For the purposes of that study a sizable contribution was received from the Cabot fund. The study was an outcome of the unemployment conference, of which Mr. Hunt was secretary. Mr. Hunt had been associated with Mr. Hoover throughout the preparation of the report on waste in industry.

E. E. HUNT
Secretary, U. S. Coal Commission

Mr. Hunt was graduated from Harvard in 1910. From 1910 to 1914 he did editorial management work. With the outbreak of the war in Europe he was sent to Antwerp by the Committee for Relief in Belgium. He was in charge of the entire Antwerp district, in which he supervised the work connected with feeding and providing fuel

and housing for more than one million people. During the last eighteen months of the war he was in charge of the front-line work in France for the American Red Cross. For his war services he has been decorated by France, Belgium and Italy.

By profession Mr. Hunt is a mechanical engineer, but most of his experience has been on the economic side of industry. He has made extensive studies of the machine-tool industry and in the New York clothing industry. During the past year he has devoted much of his time to a study as to how far the extremes of the business cycle are controllable. He has demonstrated his ability as a good organizer and has been particularly successful in handling groups of men in conferences and conventions.

Pledges to Coal Commission Co-operation of Geological Survey and Bureau of Mines

The United States Coal Commission has started to use all the available resources of the Government in its fact-finding work. How large is this supply of authoritative information is in part indicated by a letter just received by the commission from the Secretary of the Interior.

After stating the interest of Secretary Fall as a former mining man in the mining work of his department, the acting secretary offers to the commission the resources of information and experienced personnel, and pledges full co-operation of all members of the technical staffs of the two bureaus, the Geological Survey and the Bureau of Mines.

Acting Secretary Finney continues: "These two bureaus have studied our coal industry for 43 and 12 years respectively, and there is no other fund of information in existence that throws more light upon the growth and present status of this industry than that available in the files of these two bureaus, and their engineers, statisticians and geologists are ready to co-operate in any advisory capacity with the Coal Commission.

"As specific suggestions I may mention that the Bureau of Mines can furnish information or help along the following lines: (1) Waste in mining. (2) Waste in utilization of coal and other fuels, including data as to the extent of such waste and where it occurs. (3) Practicable measures for conservation of fuel. (4) Competitive effects of gas and oil on the coal markets. (5) Competition of foreign coal as influenced especially by the conditions and cost of mining. A study of this has been made on the ground by the Chief Mining Engineer of the Bureau. (6) Effect of the government leasing policy on the supply of coal and market competition in the Western states. (7) Possible increased competition due to the use of beneficiated lignite or low-grade coals, as also of processed coals in the East. (8) Subsidence of the surface due to mining, its effect on capital and operating costs. (9) Methods, cost and extent of coal storage. (10) Effect and extent of applicability of machine work to mining.

"The Bureau will be very glad to examine and report upon the effect of any proposal that may be made as to the safety of men in the industry, its probable effect upon their efficiency and the readjustment in labor organization and management that will be necessary to put it into effect.

"While not prepared to take full responsibility, the Bureau will be glad to co-operate with any other agency in study of such problems as the transportation of coal, its organization from mine to market so as to best facilitate getting it through the 'bottle necks' in the transportation system; the zoning of coal; pooling, particularly for lake and coast deliveries; the development of a use classification to simplify market grading. On all of these subjects the Bureau has a large amount of accumulated data resulting through its many years' experience in sampling and inspecting coal for purchase by the government and by foreign countries. This is supplemental to its own experience in the conduct of the Government Fuel Yard, where coal is purchased, transported and delivered to all government buildings in the District.

"The Bureau has a large force of engineers, many of whom are located in the coal fields, and a direct contact through them with both operators and miners. Its major interest is in safety and efficiency in mining rather than the economics of the industry, but its technical data will be gladly and freely placed at the disposal of the commission.

"The Geological Survey has followed two general lines in its coal investigation under each of which a score or more of topics might be enumerated:

"(1) The extent and location of the underground reserves of coal, including the segregation and valuation of the public coal lands in the West. This appraisal of our national wealth in coal is a continuing project in which additional work is done each year.

"(2) The business of mining and marketing coal. The Survey's annual reports on coal production furnish a forty-year history of the industry, including not only statistics of production but also information on trend of size of mines and of companies, mine capacity, men employed and days worked, mining methods, prices and disposition of product.

"These records are not merely a statistical history of the industry. Each annual report contains extended comment by an observer devoting his entire time to the industry, on the economics of production and distribution. The important facts as to labor controversies, consolidations, changes in methods of mining and fluctuations of demand and supply are there referred to. The coal specialists of the Survey have been associated with the outstanding events in the industry throughout that period. E. W. Parker, in charge of coal statistics in 1902, was made a member of the Roosevelt Anthracite Commission. His successor, C. E. Lesher, was adviser to the Peabody Committee on Coal Production, and later chief statistician for the Fuel Administration. In fact the files of the Fuel Administration were turned over to the Interior Department and the coal specialists of the Survey are perhaps more familiar than anyone else available with the material in those files which bears upon the Commission's work. Statisticians of the Survey have been in attendance at the several investigations made by committees of the House and Senate in recent years and are familiar with the evidence presented at those hearings.

"For the past seven months the Survey has co-operated with the conference on unemployment in the preparation of statistics bearing on intermittent operation. The preparation of these exhibits, based largely on Survey records, has been in charge of F. G. Tryon, the present coal statistician of the Survey. I understand that the records will be turned over by the Secretary of Commerce to the Coal Commission.

"The technical and clerical staff which has built up all these records will be perhaps of more value to the commission than the records themselves. The staff have had years of experience in investigations of the coal industry and with their auxiliary equipment of mailing lists and computing and tabulating machines they may be of assistance in carrying forward new studies needed by the commission. The experienced clerical workers of the coal statistical unit were used as the nucleus around which the Fuel Administration built up its extensive statistical service.

"Closely co-ordinated with the Survey's work on coal is the corresponding work on coke, manufactured gas, natural gas, petroleum and electric power. The annual and current reports on production of these fuels and electric power and the special investigations made from time to time, such as the recent superpower survey, have furnished a body of material on the supply and demand of heat and power which the commission may wish to consult in weighing the place of coal in our national life."

Seven Injured by Slate Fall in Mine at Brownsville, Pa.; Three May Die

Seven men were injured, three probably fatally, in a fall of slate Oct. 10 in the Maxwell mine of the H. C. Frick Coke Co., near Brownsville, Pa. Pinned under the débris of the first fall, the seven men were helpless when a heavier second fall of slate enveloped them.

The seriously injured are Dewey Rankin, mine foreman; Steve Ritsky, assistant mine foreman, and Edward Queen, all of whom may die as a result of their injuries. Others injured are Peter M'Kenna, Fred Reynolds and two unidentified foreigners.

In a short time the men were dug from beneath the slate and carried to the surface.

A Public Policy for the Coal Industry*

By James A. Emery†

What does the outsider see in the coal industry today—not the prejudiced, nor the impassioned, nor the embittered, nor the merely selfish observer of your industry, but the citizen who has a sincere interest in the relationship of your great industry to the social and political problems that it is creating? During six months of deliberately suspended production he has perceived upon the one hand a solid, unified organization of workers, so powerful that it has been able to successfully resist not only economic argument but official persuasion; and on the other hand he has perceived a great industry of highly intelligent and responsible operators disintegrated and disunited, with no single responsible group or spokesman who could speak the collective thought and the collective judgment and state the collective policy of a great American industry!

Does that not suggest that there never was a more favorable, a more desirable, a more necessary moment in which this great industry should enter upon a highly systematic, organized self-examination, self-analysis and self-declaration of policy for self-government?

All the forms of government that we have had any experience with in this world must live under restraint and authority, and they either take that authority from without or they impose it from within; and the difference between popular and autocratic institutions is that the one finds its rule imposed upon the outside and the other imposes its rule upon itself by voluntary self-restraint established from within. Doesn't the coal industry need today a scientific, self-examination of its own facts?

It is essentially in the public interest that the control of private property shall be preserved within the limits of public interest; and these change with the intensity and complexity of public life, because government is no longer a mere maintainer of order. It must, under the circumstances of modern life, undertake to carry out production and distribution against arbitrary interruption, and these high obligations have fallen upon it with an intensing degree of necessity.

Appointment of Commission Due to Public Opinion

The public view of this thing, as I see it today, has been very fairly expressed in the appointment of a so-called fact-finding commission. My only anxiety is whether it will discover the facts or whether it will merely paint a picture of its theories. But no industry is so well fortified to meet the facts of life today as the one that knows itself, and by a critical examination is prepared to present, as occasion arises, an accurate picture of its own operation. And that is what American industries have been doing.

I would venture to urge upon the coal industry (to urge not only in its own interest but in the interest of the public as well, that ultimately will be the terrible sufferer if a public policy is established for the coal industry that does not correspond with the facts) the establishment of a public policy based upon facts. There is nothing that the American people have paid so terrible a price for, or have suffered for so much in the past ten years of their life, as the substitution of political answers for economic answers to economic questions. And no policy will succeed with the coal industry that is not predicated upon its facts.

First of all the coal industry cannot do better at this time, cannot fortify itself more successfully, than to undertake to organize for its own self-examination in the determination of facts with respect to itself. Until it knows itself, it cannot relate itself to others. And, secondly, it is for it to establish its public relations. I mean by that not only to make itself known as it is to the public, but to make itself known as it is to the public's representatives.

It is an easy matter to "cuss" Congress; we all do it, and then we rest ourselves by "cussing" the state legislatures or the local Board of Aldermen. But representative government is a mirror in which we reflect ourselves, because it not only pictures our virtues but it very accurately defines our defects—and the besetting sin of American business has been indifference to politics. God help the man who says that business ought to keep out of politics. Business ought to get into politics, because if this nation is going to endure it isn't going to have its policies determined by a mob, but it is going to continue to be what its founders believed it would be: an aristocracy of intelligence and character, directing a democracy of right and opportunity!

Who can organize and give direction to a public policy for the coal industry better than the men who know it? They will be listened to exactly in proportion to the breadth of enlightened selfishness with which they commend themselves to public attention. Remember, that if you don't sit in the saddle to correct evil and guide the horse of reform, there are many willing riders who think they can ride the beast better than you can.

The country has suffered from the social advice of gentlemen who could not fill pulpits to the satisfaction of a congregation. It has been advised on employment relations by men who never hired a domestic servant except in their wife's name. It has had great public policies established for it by gentlemen who had no responsibility for their utterance except the price of their lecture.

A people like ours, gentlemen, will live when we meet our public responsibility and take upon ourselves the responsibility to honestly perceive and undertake to accurately define, first, our obligations, and then I say with equal sincerity, and determination to assert and enforce our rights.

Advises Frank Facing of Employment Relations

I believe that with the coal industry demonstrating its sincere interest in the public welfare, it is in a position to present to the public, and its representatives, through self-organization and self-examination, an accurate picture of what it is and what its relationship to the public ought to be. But, gentlemen, I don't believe that we will ever accomplish for the coal industry what we hope to see accomplished—to preserve it from not only incompetent and unwise but invalid regulation—unless the industry is ready in an organized way to frankly face the problem of its own employment relations. I say that it faces invalid regulation. Why, I think that the field of coal regulation today is the last great battleground of local self-government, as opposed to overwhelming federal control.

The people of the United States have had ample warning of the situation that was bound to develop in the coal industry. Year after year the danger signs were lifted in the public sight, and year after year an indifferent and apathetic people refused to heed them. And now we come to emergencies, and emergencies always excite governmnt under popular pressure to extreme exercise of unusual power. The neglect to establish social controls in the public interest, that would insure the protection of public right, protected in the person of private agents performing a semi-public service, has led us to the situation in which we are today, but not without considerable assistance from within the industry itself.

Nobody can read the history of employment relations in the coal industry, as spread upon the records of the courts of the United States, without perceiving that gentlemen found the miners' union at times a convenient means of equalizing what it termed competition. You will recall that Aesop wrote a fable about the fox who lost his tail, and having lost it he spent a good deal of time in persuading other foxes that a tail was a useless appendage. And there have been operators who, suffering under union control and domination, have not only undertaken to persuade others that they needed it and didn't need the freedom that they enjoyed, but encouraged the union, without realizing what it was they were encouraging.

Today the field of employment relations in the coal industry represents a condition that threatens the economic

*Abstract of address before American Mining Congress, Cleveland, Oct. 11, 1922.

†Chief counsel American Manufacturers' Association.

and social security of the United States. But when a great industry cannot adjust itself to changed economic conditions but must submit not to argument nor to reason nor to fact, but to force, it has lost control of the first function of management, and its first duty in meeting a public situation. The coal industry today knows that it is on an uneconomic basis, and it has just had demonstrated to it the fact that it cannot get out from under it.

An organization that is committed to the proposition that it deserves the full social value of its product and interprets that to mean its value less transportation is by its commitment to a public policy going to stop short of nothing but control, and that control can take two forms: One, the direct absorption of the industry, which it never expects to accomplish. The other, the political control, similar in form to that which was proposed for the railroads, in which the National Government will buy, for the high political influence of the miners' union, the possession of the mines which they, with the exertion of their political authority, will control. And yet, faced with this philosophy, knowing that they were contributing daily to the growth of a great organization, now numbering around 600,000 militant men, devoted as a principle of philosophy to the nationalization of the mines, the operator has become the recruiting sergeant for the proponents of nationalization and the collector of its funds, to be dispersed in the destruction of his own right of private property.

I think never did the call go out so strongly to American business men to recognize their great public responsibilities, and certainly never has opportunity more gracefully and yet more forcefully presented itself at the door of the coal industry to say to it, "For God's sake, gentlemen, establish the effective means of self-study, self-analysis, self-government within yourself, that you may demonstrate to the American people the realization of your responsibilities as the trustees and fuel agencies of our civilization, and having fortified yourself with the armor of fact and with the weapon of experience and information, analyzed and reduced to practical terms, proceed then, in the light of your experience, to undertake to organize your public relations with the people of the United States and with their agencies, as the effective means of providing defense for yourselves and an effective public policy to protect and promote the interest of the United States."

Surely the coal industry can and will meet the responsibilities of this hour and save us in other industries, as they save themselves, with our co-operation, our sympathy, our understanding; the hand of brotherhood extended to them, to assist them in the working out of their own problem, but calling upon them to provide the means of making co-operation good by establishing self-organization, self-control, self-direction and self-development within themselves, that in a single responsible voice or a single group voice may speak the collective thought and collective opinion of the coal industry to the American people and its representatives, not only with fairness, with breadth of mind and common understanding, but with a firmness that is determined alike to recognize its obligations and to assert, without fear of the consequences, its rights as citizens.

Municipal Departments of New York to Utilize Small Sizes of Anthracite

After a conference of the heads of municipal departments of New York City, Oct. 23, it was announced that during the coming winter the city would burn small sizes of anthracite. This will release hundreds of tons of domestic sizes of anthracite for household consumption, it was said. City Fuel Administrator Arthur A. Learoyd said that Commissioner Whalen would readvertise for bids on the substitute fuel agreed on to be used in city buildings.

IT IS HARD TO TELL what or when the world is coming to. —*Greenville Piedmont.*

IF EUROPE DOESN'T WORK IN PEACE, she may be forced to rest in peace.—*Asheville Times.*

Retail Margin of Profit on Coal Fixed in Ohio Averages $1.86 Per Ton

Retail margins of profit on each ton of coal sold in Ohio, whether Ohio-mined or imported, have been fixed by Fuel Administrator Neal and approved by Governor Harry L. Davis. The average profit permitted retailers under the schedules is $1.86 and there are approximately 106 different margins fixed. This completes the first entire regulation by the state from the mine to the consumer under the emergency legislation recently enacted. Price margins are effective as of Oct. 20, giving five days for publication of notice to various dealers. The margin applies to the price at the mine plus the freight rate to the dealer's yard. The lowest retail allowance is 65c., in Gallia County, while the highest is $2.75, permitted in Cleveland. Under the new order where the customer makes his own delivery he is to have a reduction of 75c. per ton from the margins allowed.

Prices Ohio consumers must pay for West Virginia smokeless range from $9.99 to $11.34 a ton, in accordance with the official price list given out by State Fuel Administrator Neal. The prices are based on the federal maximum fair price of $6 a ton for West Virginia coal at the mines. Variance in transportation charges to Ohio points is responsible for the range. The price in Columbus is to be $10.09 to $10.29 a ton. In other cities they are: Cleveland, $10.74@$11.34; Sandusky, $10.64@$10.84; Toledo, $10.54@$10.74; Canton, $10.07@$10.84; Youngstown, $9.99@$10.94; Akron, $10.07@$10.84; Dayton, $10.39@$10.49; Marion, $10.04@$10.24.

Michigan Governor Seeks Aid of Congress To Fix Reasonable Prices at Mines

Legislation designed to regulate distribution and cost of coal and coke in Michigan having been approved by the Legislature and signed by Governor A. J. Groesbeck, the latter has arrived at the conclusion that the most direct way of holding down prices is to be found in establishing reasonable prices at the mines. He is urging the governors of various other states to join him in appealing to Congress for action to that end.

The Governor also is conferring with Conrad E. Spens, Federal Fuel Administrator, in the effort to obtain more reasonable prices on anthracite than are quoted by some of the independent operators, seeking business in Detroit with quotations of $12@$14 at the mine.

Dealers applying for licenses in Wayne County are required to report on the quantity of coal they sold last year, the amount they have sold so far this year and how long they have been in business. This information is expected to supply a basis for computing the fuel requirements of the state and for determining the eligibility of the dealer to be classed as a legitimate coal merchant.

The new Michigan law is quite similar to the legislation enacted in New York State, though the Michigan law is said to be less drastic in some of its provisions.

Coal Consumption by Utilities in August Highest of Any Month Since February

Electric public-utility plants consumed 2,814,141 net tons of coal during August, according to a recent report of the Geological Survey. This is the largest tonnage for any month since February and compares with 2,563,607 tons in July. Production of electricity in 1922 has been accomplished through steadily increasing use of fuel power, while water-power production has declined gradually from the high mark of the year attained in May.

Evidently the scarcity of coal has increased the use of oil and gas, as August saw a record-breaking output of electricity, averaging 131,100,000 kw-hr. per day, exceeding the June record by 2½ per cent and July by 5 per cent. The heavier production no doubt was due to the increase in the domestic and commercial lighting load brought about by the activity in the building industry and by the demand by industries who were forced by lack of coal to turn to public-utility plants for power.

German Coal Situation Proves Not as Bad as Pictured

BY H. O. HERZOG
Berlin, Germany

The annual report of the German National Coal Association, dealing with the production, evolution of prices, consumption and supply between April 1, 1921, and March 31, 1922, has just been issued. Of special interest is the balance of loss drawn after the final division of Upper Silesia. Of 75 mines which produced 43,800,000 tons in 1913 and approximately 30,000,000 tons in 1921, representing 75 per cent of the total production, 59 have gone to Poland. Measured by the production of 1913, the loss to the national wealth thus incurred is 400,000,000 gold marks per year. The actual loss of coal to the supply of the interior of Germany is, however, not so large as has been commonly stated in public, the fact that the province itself consumed the third part of the output, while another third part was exported under Entente control to surrounding countries, having more or less been kept from public attention. Actual shipments to the interior of Germany have averaged 12,000,000 tons during the last two years. The output of the mines remaining to Germany may for this year be assumed at 8,000,000 tons. Deducting therefrom the now greatly reduced local requirements, which probably will be 2,000,000 tons, 6,000,000 tons will remain for the supply of the German interior. The net loss to the latter, therefore, is only 6,000,00 tons per year.

The National Coal Association is an institution called into existence by the law of March 30, 1919, regulating the control of coal; it forms part of the organization provided for this purpose, the other members being the National Coal Commissary and the National Coal Council. The first named is the executive and the latter an advisory body, best described as a coal parliament. In this organization the Coal Association represents the producers; it is formed as a joint stock company with a nominal capital of 250,000 marks, in which the coal syndicates of the various districts and the States of Prussia and Saxony in their capacity as mine owners are shareholders. It does not transact business in the proper sense, having nothing to do with sales or distribution. Its object is the adjustment of coal prices in conjunction with the other members of the organization of control, and eventually to assume the function of the coal commissary.

SUMMARIZES COUNTRY'S COAL SITUATION

Although a few representatives of the labor class are sitting on its board of directors and also are represented in the board of managers, the Coal Association is more or less a combine of the producers' interests, wherein lies its chief importance as a public institution. This is reflected in the annual report of the association, which goes far beyond its actual object and is a summary on the whole coal situation.

The picture presented by a review of the production at the present rate and that of the past years is not at all hopeful. In no mining district has the pre-war average been attained, or the average of the short-handed war time been reached. The best result so far reported is that of Lower Silesia, where the output in 1921 was 84.5 per cent of that of 1913. The next best were Saxony, with 82.6 per cent, and the Ruhr district, with 81.8 per cent. The worst case is that of the Aix la Chapelle fields, with only 64.2 per cent. Upper Silesia, with 67.7 per cent, was only a trifle better. Considering that the output of 1913, upon which these figures are based, is the highest on record, these figures do not make a bad showing.

In nearly all cases, with the exception of the Aix la Chapelle district, a considerable recovery has taken place since 1919; in the Ruhr district, for instance, it was from 61.9 per cent to 81.8 per cent of the 1913 output. When, however, the means whereby this recovery has been achieved is taken into account, these figures have a sinister significance.

Over 1,000,000 men were employed in 1921 in German coal mining, including brown-coal mining, as against 660,000 in 1913. The increase of employees in bituminous-coal mining from 1913 to 1921 was no less than 263,000, or nearly 50 per cent. The output of the inside workers per hour in 1920 dropped to 116 kg. as against 136 kg. in 1913. During 1921 the average was even a trifle lower, showing a slight recovery during the first three months of this year. According to consecutive reports this recovery was only temporary. The efficiency of labor in the Ruhr district is at present about 85 per cent of pre-war standard and in Upper Silesia it is only 77 per cent. When it is considered that 840,000 men employed in coal mining produce now only 80 per cent of what 580,000 men produced in 1913, the standard of efficiency appears to be still lower or approximately only 55 per cent. Almost identical conditions prevail in brown-coal mining.

The quantity of coal at disposal for the supply of the country within the present frontiers, after deducting the Entent tribute and the compulsory export from Upper Silesia and ignoring small quantities of free export, averaged in 1921 75 per cent of that of 1913. The increased production of brown coal, amounting to 36,000,000 tons, is one of the few favorable aspects of the situation. The efficiency of brown coal has been estimated at 2/9 of that of bituminous coal, which is entirely too low, considering the progress made with brown-coal combustion. The report leaves out of discussion how the financial situation of the mines has been affected by the prevailing price policy. In touching upon the evolution of coal prices in comparison with the increase of wages and other component parts of cost and production the report leaves it to the reader to draw his own deductions.

COST AT MINES MOVES SKYWARD

The increase of the net cost price at the mines exclusive of taxes and other levies is 49.76 times that of 1913. The cost of labor for one ton of coal during the same time has increased 51.93 times. It is interesting to note that in pre-war times the ratio between wages per shift and cost of labor per ton was 5.50 to 6.20 marks, while in April, 1922, the ratio was 177 to 322 marks. The relation has, therefore, charged from 1:1.2 to 1:1.82. Other details of production cost have increased above pre-war prices in a still larger proportion, as, for instance: Rails, 64 times; iron ties, 77 times; oil, 60 times; wire, 77 times; structural steel work, 100 times; boilers and piping, 110 times; electro-technical equipment, 65 times.

This demonstrates that the level of coal prices is maintained to a certain degree at the expense of the prosperity of the mines, leaving them hardly any margin for renewal and extension. As a consequence the equipment is largely run down, especially in the case of coking plants.

While the National Coal Association is loyal enough in public to attribute these unfavorable circumstances to the general unfortunate situation, in private conversation bitter complaints are heard of the short-sighted price policy which prevented the accumulation of sufficient funds for renewal and extension while they were still possible. The time for such is now considered past. The only way out of the existing difficulties is the extension of the working time. Opposition of the miners to overtime has lately receded, but the concession made lately for three extra shifts of two hours each per week is, unless considered only as a start, entirely insufficient.

To sum up the situation, in 1913 Germany had a surplus of coal export over import of 34,000,000 tons; in 1921 76,500,000 tons of coal were left for the country's consumption as against 119,000,000 tons in 1913. The total deficit in the supply compared with the latter year, taking into account both bituminous and brown coal, was in 1921 38,500,000 tons, which, when added to the export surplus, shows a total loss of 73,000,000 tons. The deficit in supply has to be made up by imports as long as it is not covered by increased production. The next few months will show what

increase the extra shifts will produce. It is out of the question, however, to expect the shortage of 3,000,000 tons per month to be made up in this way. For this reason, the report concludes, Germany has turned from a coal exporting country into an importing one. The coal imports must continue independently of the state of exchange rate. The only influence the latter will exercise is that of acting as a spur to greater economy.

Effect of National Wage Agreement On British Coal Mines

Some interesting results of the working of the national wage agreement which has been in force in Great Britain for more than a year have recently been given out by the Mining Association, which body represents the operators in the United Kingdom.

The first quarter, i.e., immediately preceding the great stoppage, resulted in a loss to the owners of £14,684,936. This was the position when the strike began. The cost to the pits of the stoppage is estimated at a minimum of £10,413,650. The following table gives the results of colliery operation during the first year (to June, 1922) of the national agreement:

TRADING PROFITS

Scotland	£303,872
Northumberland	484,685
Durham	712,065
South Wales	918,384
Eastern Federated Areas	5,504,586
Lancashire, Cheshire and North Staffordshire	1,325,749
North Wales	41,609
Forest of Dean	22,959
Somerset	45,810
	9,399,519

TRADING LOSSES

South Staffordshire and Shropshire	£52,349
Cumberland	141,799
Bristol	13,618
Somerset	17,921
Kent	49,344
	275,031

If the net trading profits are set off against the loss during the strike it is seen that the net loss was £1,328,962. In the corresponding period of 1913 the profits were £28,000,000.

From last November to June of this year the owners have paid out £2,980,143 to make the wages up to 20 per cent above the standard.

During the year under review the tonnage and profit or loss figures were:

	Tonnage Raised	Profit (+) or Loss (—) Total	Per Ton
Scotland	29,804,685	+£303,872	+0s. 1.0d.
Northumberland	11,524,549	+484,685	+0s. 10.9d.
Durham	31,101,133	+712,065	+0s. 5.5d.
South Wales	42,666,516	+918,384	+0s. 5.1d.
Eastern Area	70,996,368	+5,504,586	+1s. 6.6d.
Lancashire and North Staffordshire	21,865,384	+1,325,749	+1s. 2.5d.
North Wales	2,497,617	+41,609	+0s. 4.0d.
South Staffordshire and Salop	1,515,525	—52,349	—0s. 8.2d.
Cumberland	1,941,526	—141,799	—1s. 5.5d.
Bristol	286,039	—13,618	—0s. 11.3d.
Forest of Dean	627,884	+22,959	+0s. 8.7d.
Somerset	740,075	+27,889	—0s. 9.0d
Kent	352,642	—49,344	—2s. 9.0d.
Great Britain	215,919,943	+9,084,688	+0s. 10.1d.

Note: The British pound is equal to about $4.46 at the present rate of exchange

Enginemen to Become Coal Operators

The Brotherhood of Locomotive Engineers is to enter the ranks of the coal operators, according to a statement by Albert F. Coyle, editor of the *Brotherhood of Locomotive Engineers' Journal.* "The Locomotive engineers are making a $2,000,000 investment in West Virginia and Kentucky coal mines," said Mr. Coyle, "which means not only a fair deal for the miners but better and cheaper coal for the consuming public.

"The leading officers of the brotherhood have obtained control of more than 6,000 acres of the best coal land in the United States, situated on Coal River, in Boone County, West Virginia, and in Floyd County, the heart of the Big Sandy coal district, near Prestonburg, Ky.

"The Coal River Collieries, as the new company is called, is owned by hundreds of locomotive engineers throughout the country, who have subscribed in small amounts to the capital stock of $2,000,000.

"The engineers are not only going into the business of mining coal; they are also planning the establishment of retail yards to sell their coal at reasonable prices to railwaymen and other workers in the large cities. Locomotive engineers and their friends have already organized these auxiliary coal yards in Ohio and Michigan, and have placed contracts with their coal companies for delivery direct from the mine pits to consumers. It is estimated that the mines will have a capacity exceeding 6,000 tons a day."

Smokeless Output in August Exceeded That Of a Year Ago, Despite Car Shortage

Notwithstanding the handicap of a car shortage, 2,847,738 net tons of coal was produced in the four smokeless districts of West Virginia in August, according to figures just compiled. Output during the first eight months of 1922 exceeded by six and a quarter million tons that of the corresponding period of 1921. If production can be continued at the same rate during the remainder of the year, there is every prospect that 1922 will eclipse the banner production year of 1916, when 36,000,000 tons was produced.

The following is an analysis of smokeless production for August and for the eight months of the year:

AUGUST OUTPUT OF SMOKELESS COALS IN WEST VIRGINIA
(In Net Tons)

District	1922	1921	1922 Decrease	1922 Increase
Pocahontas	1,479,004	1,155,645	.....	323,359
Winding Gulf	458,329	443,604	.....	14,725
New River	511,990	510,200	.....	1,790
Tug River	398,415	315,075	.....	83,340
Totals	2,847,738	2,424,524	.....	423,214
Totals, July	2,630,565	2,164,185	.....	.....
Totals, June	3,777,558	2,869,574	.....	.....
Totals, May	3,687,874	2,975,711	.....	.....

The Norfolk & Western hauled 1,872,875 tons of the August output, the Virginian 432,103 tons and the Chesapeake & Ohio 542,850 tons. The total coal movement in net tons of the three roads during that month is shown in the following table:

HAULED BY NORFOLK & WESTERN

Pocahontas	1,474,370	Clinch Valley	185,645
Tug River	398,415	Kenova	143,370
Thacker	570,020		
Total			2,771,820

HAULED BY CHESAPEAKE & OHIO

Logan	764,450	Kanawha	152,880
New River	423,060	Coal River	120,150
Winding Gulf	119,790	Kentucky	236,820
Total			1,817,150

HAULED BY VIRGINIAN RY.

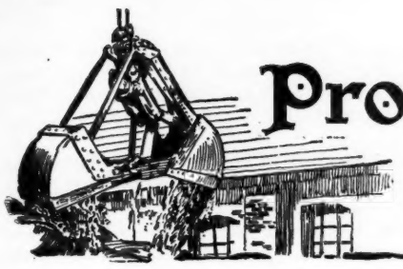
Winding Gulf	338,539	New River	88,930
Pocahontas	4,634	High Volatile	67,050
Total			499,153

Forty-Eight More Men Indicted for Murder In Connection with Herrin Massacre

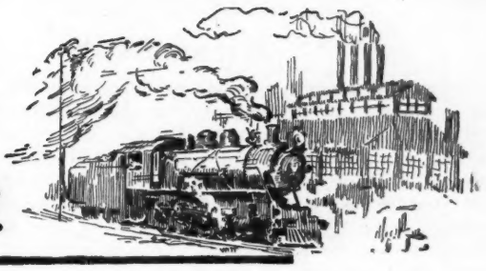
The special grand jury at Marion, Ill., finished its work on the Herrin massacre case Monday, Oct. 23, by indicting forty-eight more men for the murder of Ignace Kubenis, a victim who died of wounds since the jury recessed last month. Circuit Judge Hartwell says the indictments are illegal because returned at a term of court subsequent to the one at which the jury was impanelled. State's Attorney Delos Duty disagrees with him.

Only a few witnesses were heard on Monday, and they are said to have told of wounds inflicted on Kubanis, and which are said to have resulted in his death. This makes 434 persons the grand jury has indicted in connection with the rioting in which twenty-three men were killed.

MOST MEN'S IDEA of a living wage is about two dollars more than they get.—*Portland Oregonian.*



Production and the Market



Weekly Review

Colder weather has strengthened the domestic market. Industrial buyers, however, are as yet unchanged in their attitude of aloofness. Cars are so short and the steam market so weak that the net result is a continuation of the price decline which has been in effect for the last 60 days. *Coal Age* Index of spot bituminous coal prices receded to 352 on Oct. 23, a drop of 16 points from the preceding week; the average price corresponding to this index number is $4.26—the week before it was $4.45.

Car shortage is prevalent everywhere and poor transportation conditions make deliveries slow and uncertain, but circumstances indicate that there would be a heavy surplus of coal if the carriers were able to give better service. As it is, production is becoming more evenly balanced with current demand, and even the slight upturn in general industrial buying which has been brought about in the last ten days discloses the narrow margin between supply and demand.

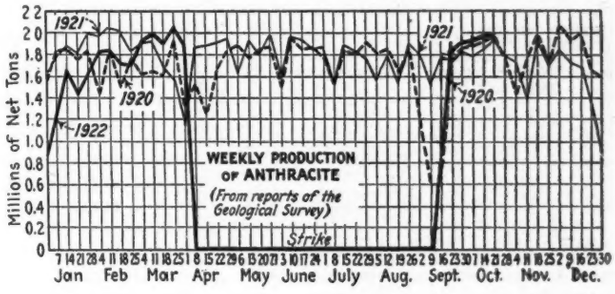
Even Railroads Have Delayed Stocking

The stocking program has not yet started. Even the railroads are not building up any appreciable reserves. The feeling seems to prevail that with the end of the Lake season and more seasonable domestic weather there will be plenty of tonnage then available to care for current needs and to build stocks. Day-to-day requirements constitute the main market activity and prices show a wide range. Some coal, caught on a poor market, sells off, while on the other hand a consumer in need of coal pays the higher quotation without a murmur. There is no complaint heard about the ruling prices, nor is the consumer evincing any apprehension about the state of the market when colder weather may be expected to interfere with the movement from the mines.

New England is deaf to the offerings being made to that market. Large consumers in that territory have sufficient coal on hand to await developments in November and December. The smaller buyer is taking some additional tonnage that he has been considering since last July, but the amount is not sufficient to check the declining current quotations, whether all rail or coastwise. British coal is still a factor along the Atlantic seaboard, but receipts are falling off daily.

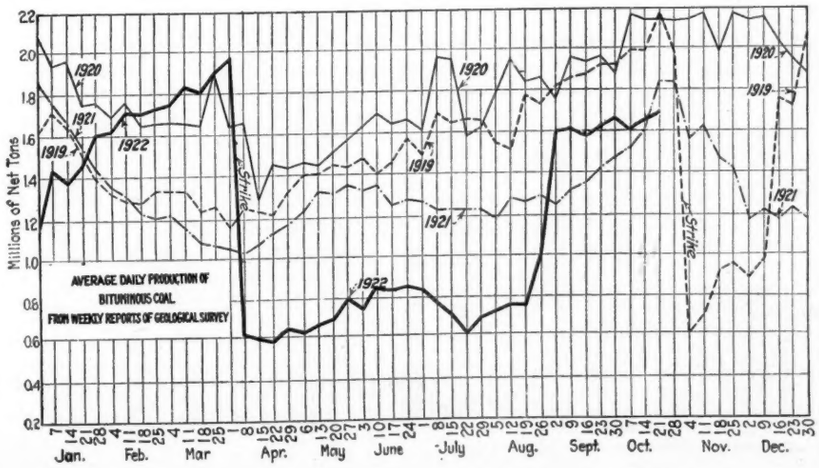
The Cincinnati gateway is feeling the competition of coals from outside territory and prices have softened all along the line. Eastern inland markets, however, feel the heavy drain on production made by the Lakes and railroads, and this section presents the firmest market of today. Chicago and Midwestern points are saturated with steam coals, produced in an effort to meet the onrush of domestic orders.

Anthracite domestic sizes are, of course, in heavy demand and the cold weather has brought urgent orders to the retailer. Movement still centers on the East, although Lake business is increasing. Western and



more distant points are receiving meager shipments, much of it at high independent figures.

Steam sizes are burdensome. Sales are slow and companies are running these coals to storage, while various railroad embargoes have been placed against their movement, as the congestion of these loads threatens to affect production of the much-needed family sizes.



Estimates of Production

(Net Tons)

	1921	1922
BITUMINOUS		
Sept. 30 (*b*)	8,890,000	9,822,000
Oct. 7 (*b*)	9,134,000	9,736,000
Oct. 14 (*a*)	9,711,000	10,021,000
Daily average	1,619,000	1,670,000
Calendar year	314,285,000	290,773,000
Daily av. cal. yr.	1,299,000	1,197,000
ANTHRACITE		
Sept. 30 (*b*)	1,802,000	1,947,000
Oct. 7 (*b*)	1,764,000	1,959,000
Oct. 14 (*a*)	1,813,000	2,075,000
Calendar year	73,179,000	31,212,000
COKE		
Oct. 7 (*b*)	86,000	173,000
Oct. 14 (*a*)	94,000	183,000
Calendar year	4,293,000	5,142,000

(*a*) Subject to revision. (*b*) Revised from last report.

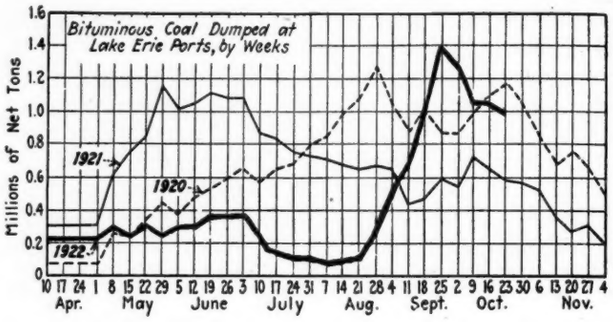
BITUMINOUS

"Complete returns on coal production in the third week of October show an increase to about 10,200,000 tons of soft coal," says the Geological Survey. "The number of cars loaded on Monday, Oct. 16, as reported by the railroads was 41,201 cars, establishing a new record for this year. On Tuesday loadings declined to 31,330 cars, and on Wednesday to 29,996. These were, however, the highest loadings reported on any second and third working days of a week since the close of the strike. On Thursday there was a further decline to 28,784 cars."

Dumpings of Lake coal were 995,130 net tons during the week ended Oct. 23, as compared with 1,090,599 tons in the preceding week. This movement has been gradually declining since it reached the peak, during the third week in September. Total movement for the season to date stands at 13,454,130 tons; during the corresponding period of 1920 it was 20,876,307 tons.

The recent heavy receipts of soft-coal cargoes has reassured the Northwest, and while domestic business is strong the steam demand has fallen off. When navigation closes, the other sources of supply will be drawn on to help out the shortage on the docks. North Dakota lignite and Montana coals in increased production can keep the Dakotas going; southern Minnesota and southern Wisconsin can use Illinois coal, and northern parts of Minnesota and Wisconsin only need be dependent on dock supplies. The utilization of the Western coals may have a lasting competitive effect on the future dock trade.

New England all-rail receipts of soft coal were 3,636 cars during the second week of October, as compared with 3,272 cars in the preceding week. A low price of $3 was offered last week to railroads in this territory, but no takers are recorded. British cargoes and coastwise fuels leave little



Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 25 1922	Oct. 9 1922	Oct. 16 1922	Oct. 23 1922†
Smokeless lump	Columbus	$6.65	$6.75	$6.75	**$6.75@$7.5**
Smokeless mine run	Columbus	6.00	5.75	6.00	**6.00@ 6.5)**
Smokeless screenings	Columbus	5.75	5.60	5.50	**5.75@ 6.2**
Smokeless lump	Chicago	6.50	6.25	6.00	**5.75@ 7.0**
Smokeless mine run	Chicago	5.85	5.60	5.60	**5.50@ 6.50**
Smokeless lump	Cincinnati	6.30	6.30	6.60	*5.15@ 7.50*
Smokeless mine run	Cincinnati	5.70	5.95	5.95	*4.90@ 6.25*
Smokeless screenings	Cincinnati	5.30	5.80	5.80	*4.60@ 6.00*
*Smokeless mine run	Boston	8.05	7.25	7.20	*7.00@ 7.25*
Clearfield mine run	Boston	4.50	4.25	4.25	*3.50@ 4.00*
Cambria mine run	Boston	5.00	4.50	4.50	*3.75@ 4.75*
Somerset mine run	Boston	4.75	4.30	4.30	*3.50@ 4.40*
Pool 1 (Navy Standard)	New York	5.75	5.25	5.25	*4.75@ 5.25*
Pool 1 (Navy Standard)	Baltimore	5.90	5.50	5.40	*4.75@ 5.25*
Pool 9 (Super.Low Vol.)	New York	5.00	4.65	4.65	*4.00@ 4.50*
Pool 9 (Super.Low Vol.)	Philadelphia	5.35	4.35	4.35	4.00@ 4.75
Pool 9 (Super.Low Vol.)	Baltimore	5.50	4.85	4.60	*4.25@ 4.50*
Pool 10 (H.Gr.Low Vol)	New York	4.65	4.10	4.10	*3.75@ 4.00*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	5.10	3.85	3.60	3.50@ 3.75
Pool 10 (H.Gr.Low Vol.)	Baltimore	4.85	4.25	4.35	*3.85@ 4.00*
Pool 11 (Low Vol.)	New York	4.10	3.60	3.50	*3.10@ 3.50*
Pool 11 (Low Vol.)	Philadelphia	4.60	3.35	3.25	3.00@ 3.50
Pool 11 (Low Vol.)	Baltimore	4.35	4.05	4.10	*3.50@ 3.65*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	4.70	4.05	3.85	*3.25@ 3.75*
Pool 54-64 (Gas and St.)	Philadelphia	4.60	4.00	3.75	*3.50@ 4.00*
Pool 54-64 (Gas and St.)	Baltimore	4.75	4.05	4.05	*3.50@ 3.75*
Pittsburgh sc'd. (Gas)	Pittsburgh	.....	5.40	5.25	*4.75@ 5.40*
Pittsburgh mine run (St.)	Pittsburgh	4.50	3.60	3.60	*3.00@ 3.50*
Pittsburgh slack (Gas)	Pittsburgh	.....	4.00	3.85	*3.50@ 3.75*
Kanawha lump	Columbus	6.40	6.50	6.25	6.00@ 6.50
Kanawha mine run	Columbus	5.75	4.60	4.50	4.25@ 4.75
Kanawha screenings	Columbus	5.65	4.50	3.60	**3.50@ 4.00**
W. Va. lump	Cincinnati	6.50	6.50	6.25	6.00@ 6.25
W. Va. Gas mine run	Cincinnati	.....	.....	4.60	*4.00@ 4.75*
W. Va. Steam mine run	Cincinnati	.....	.....	3.75	*3.25@ 3.50*
W. Va. screenings	Cincinnati	5.10	4.10	4.00	*3.00@ 4.25*
Hocking lump	Columbus	6.25	5.25	5.45	*5.00@ 5.50*
Hocking mine run	Columbus	4.75	3.50	3.50	3.25@ 3.75
Hocking screenings	Columbus	4.25	3.50	3.25	3.00@ 3.50
Pitts. No. 8 lump	Cleveland	5.00	4.85	3.81	3.81
Pitts. No. 8 mine run	Cleveland	$4.60	$4.40	$3.56	$3.56
Pitts. No. 8 screenings	Cleveland	4.35	4.05	3.31	*3.20@ 3.31*
Midwest					
Franklin, Ill. lump	Chicago	5.40	5.40	5.35	5.25@ 5.50
Franklin, Ill. mine run	Chicago	4.75	4.50	4.50	4.25@ 4.75
Franklin, Ill. screenings	Chicago	4.10	3.25	3.25	3.00@ 3.50
Central, Ill. lump	Chicago	5.10	5.10	5.10	5.00@ 5.25
Central, Ill. mine run	Chicago	4.55	3.60	3.60	3.25@ 4.00
Central, Ill. screenings	Chicago	3.35	2.80	2.35	*1.75@ 2.25*
Ind. 4th Vein lump	Chicago	5.25	5.10	5.10	5.00@ 5.25
Ind. 4th Vein mine run	Chicago	3.85	4.60	4.60	*4.25@ 4.50*
Ind. 4th Vein screenings	Chicago	3.85	3.80	3.25	*2.50@ 3.00*
Ind. 5th Vein lump	Chicago	5.10	5.10	5.10	*4.50@ 5.00*
Ind. 5th Vein mine run	Chicago	4.65	4.35	3.75	3.50@ 4.00
Ind. 5th Vein screenings	Chicago	3.85	3.35	2.85	*2.50@ 3.00*
Standard lump	St. Louis	4.90	4.25	4.25	**3.75@ 5.00**
Standard mine run	St. Louis	3.90	3.35	3.35	*2.50@ 3.00*
Standard screenings	St. Louis	2.50	2.10	2.10	2.00@ 2.25
West Ky. lump	Louisville	4.90	5.25	5.05	*4.75@ 5.25*
West Ky. mine run	Louisville	4.25	3.60	3.00	*2.25@ 2.65*
West Ky. screenings	Louisville	4.00	3.25	2.85	*2.00@ 2.25*
West Ky. lump	Chicago	4.25	4.50	4.10	4.00@ 4.25
West Ky. mine run	Chicago	4.25	4.10	3.50	*3.00@ 3.50*
South and Southwest					
Big Seam lump	Birmingham	3.75	3.45	3.25	**3.45@ 4.45**
Big Seam mine run	Birmingham	2.80	2.60	2.75	*2.50@ 2.75*
Big Seam (washed)	Birmingham	3.45	3.10	3.25	*2.50@ 3.00*
S. E. Ky. lump	Chicago	6.00	6.25	6.25	*5.00@ 6.00*
S. E. Ky. mine run	Chicago	4.75	4.75	4.75	*4.00@ 4.50*
S. E. Ky. lump	Louisville	6.90	7.00	6.75	*6.25@ 6.75*
S. E. Ky. mine run	Louisville	5.65	4.75	4.35	*3.25@ 4.50*
S. E. Ky. screenings	Louisville	5.50	4.10	4.10	4.00@ 4.25
S. E. Ky. lump	Cincinnati	6.85	6.50	6.75	6.00@ 7.50
S. E. Ky. mine run	Cincinnati	5.35	4.75	4.10	*3.25@ 4.50*
S. E. Ky. screenings	Cincinnati	5.25	4.00	4.00	*3.00@ 4.25*
Kansas lump	Kansas City	6.25	5.50	5.75	5.50@ 6.00
Kansas mine run	Kansas City	5.00	4.25	4.25	*3.50@ 4.00*
Kansas screenings	Kansas City	2.60	2.60	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Oct, 16, 1922 Independent	Oct, 16, 1922 Company	Oct. 23, 1922† Independent	Oct. 23, 1922† Company
Broken	New York	$2.34	.....	$7.60@$7.75	.....	$7.75@$8.15	.....	$7.75@$8.15
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.75	$9.25@12.00	7.75@ 8.35	*$9.25@11.00*	7.75@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.75	8.10@ 8.35	9.25@ 9.75	8.10@ 8.35
Egg	Chicago	5.67	7.50*	6.90@ 7.40*	10.00@12.00	.....	10.00@12.00	7.75@ 9.25
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@12.00	8.00@ 8.35	*9.25@11.00*	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	9.25@ 9.75	8.15@ 8.35
Stove	Chicago	5.67	7.75*	7.20@ 7.60*	10.00@12.00	.....	10.00@12.00	8.00@ 9.25
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@12.00	8.00@ 8.35	*9.25@11.00*	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	9.25@ 9.75	8.15@ 8.35
Chestnut	Chicago	5.67	7.75*	7.20@ 7.60*	10.00@12.00	.....	10.00@12.00	8.00@ 9.25
Range	New York	2.34	.....	.....	.....	8.15	.....	.....
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	6.55@ 8.00	6.15@ 6.20	6.55@ 8.00	6.15@ 6.20
Pea	Philadelphia	2.14	5.50@ 6.00	6.15@ 6.25	7.00@ 7.25	6.15@ 6.20	7.00@ 7.25	6.15@ 6.20
Pea	Chicago	5.36	6.00*	5.60@ 6.10*	8.50@ 9.50	.....	8.50@ 9.50	6.15@ 7.00
Buckwheat No. 1	New York	2.22	2.75@ 3.50	3.50	3.00@ 4.00	4.00@ 4.25	3.00@ 4.00	4.00@ 4.25
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	3.50@ 4.00	4.00	*3.25@ 4.00*	4.00
Rice	New York	2.22	2.00@ 2.50	2.50	2.00@ 3.00	2.75@ 3.00	*1.85@ 2.50*	2.75@ 3.00
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.50@ 3.00	2.75@ 3.00	*2.25@ 2.75*	2.75@ 3.00
Barley	New York	2.22	1.50@ 1.85	1.50	1.00@ 2.00	2.00	*1.00@ 1.75*	2.00
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	1.25@ 2.00	2.00	1.00@ 2.00	2.00
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	2.25	.....	2.25

*Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**, declines in *italics*.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Oct. 7, 1922 Inclusive	Week Ended Oct. 7
U. S. Total	45.6	55.7	——	——
Alabama	63.5	64.6	86.3	86.2
Somerset County	55.5	74.9	36.1	35.3
Panhandle, W. Va.	55.3	51.3	61.2	52.6
Westmoreland	54.9	58.8	74.7	51.6
Virginia	54.8	59.9	56.9	62.4
Harlan	53.3	54.8	20.6	26.5
Hazard	51.7	58.4	13.6	13.1
Pocahontas	49.8	60.0	35.6	38.7
Tug River	48.1	63.7	32.5	24.6
Logan	47.6	61.1	24.5	21.9
Cumberland-Piedmont	46.6	50.6	31.4	28.9
Winding Gulf	45.7	64.3	30.7	29.2
Kenova-Thacker	38.2	54.3	41.2	30.8
N. E. Kentucky	32.9	47.7	25.7	26.1
New River	24.3	37.9	30.7	31.5
Oklahoma	63.9	59.6	60.9	61.5
Iowa	57.4	78.4	79.9	62.9
Ohio, Eastern	52.6	46.6	47.5	42.2
Missouri	50.7	66.8	65.5	68.0
Illinois	44.8	54.5	48.1	43.8
Kansas	42.0	54.9	64.0	54.5
Indiana	41.4	53.8	No	Report
Pittsburgh†	41.2	39.8	52.4	46.6
Central Pennsylvania	39.1	50.2	63.5	50.3
Fairmont	35.3	44.0	45.6	39.9
Western Kentucky	32.5	37.7	No	Report
Pittsburgh*	30.4	31.9	64.2	57.9
Kanawha	26.0	13.0	13.5	18.5
Ohio, southern	22.9	24.3	41.2	38.4

* Rail and river mines combined.
† Rail mines.

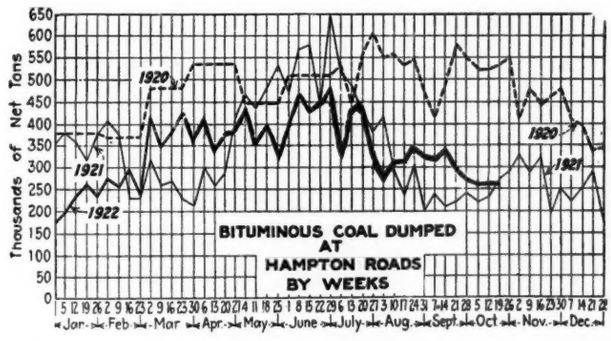
Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Cars Loaded Coal Cars
Week ended Oct. 7, 1922	968,169	189,312
Previous week	988,381	189,349
Same week in 1921	899,681	182,595

	Surplus Cars All Cars	Surplus Cars Coal Cars	Car Shortage	
Oct. 8, 1922	5,500	3,024	141,252	40,499
Sept. 30, 1922	5,843	3,486	130,325	38,954
Same date a year ago	142,970	82,535	.....	.....

room for all-rail coal in this apathetic market, and when the present high freight rate from the mines is considered it is realized that Hampton Roads is in excellent competitive position for what little business is offering.

Hampton Roads dumpings have held around 260,000 net tons for the last three weeks. During last week 260,358 tons were dumped as compared with 262,997 tons in the preceding week. Coastwise trade has dwindled of late but

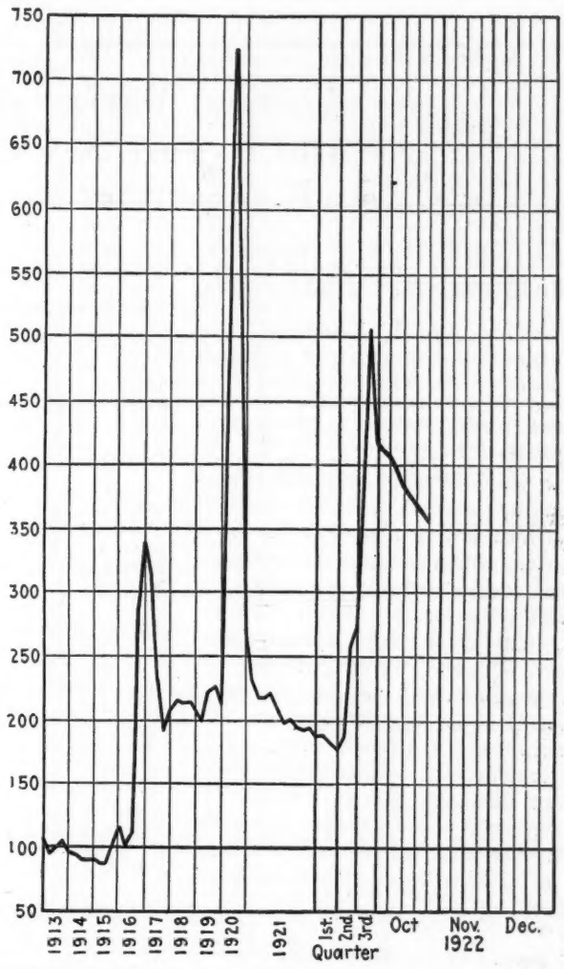

Thousands of Net Tons
1920
1921
1922
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

coal on hand at the piers is not gaining, as car shortage and transportation troubles have affected receipts. The stage appears set for a considerable resumption of coastwise shipments, both on spot and contract, as soon as the congestion of boats is cleared up at New England ports.

ANTHRACITE

Production of anthracite has passed the 2,000,000-ton mark. The output during the week ended Oct. 14 was 2,075,000 net tons, and early reports for last week indicate that production in that period will again be in the neighborhood of 2,000,000 tons.

All-rail shipments to New England were 3,226 cars during the second week of October, as compared with 2,759 cars in the previous week. The East has fared the best since mining was resumed, and the domestic situation, while still troublesome, shows marked improvement. Western points are taking a little coal, much of it at high independent



Coal Age Index 352, Week of Oct. 23, 1922. Average spot price for same period, $4.26. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

figures. Lake dumpings during the week ended Oct. 23 were 153,553 net tons.

COKE

Beehive coke production continues its slow but steady upward trend. The output for the week ended Oct. 14 was 183,000 net tons, as compared with 173,000 tons in the preceding week. The present rate is nearly double that of a year ago, when the business depression was acute.

Connellsville prices continue to break and only an occasional purchaser is coming into the market. Softening bituminous coal prices cause coke buyers to feel that they are due for lower quotations. Pig iron is so quiet that furnaces are conservative in making arrangements for reopening.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES (*a*)

(Net tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,870,000	2,764,000	4,634,000
1918 Monthly average	2,166,000	2,540,000	4,706,000
1919 Monthly average	2,095,000	1,638,000	3,733,000
1920 Monthly average	2,565,000	1,748,000	4,313,000
1921 Monthly average	1,646,000(*b*)	463,000	2,109,000
June, 1922	2,580,000	458,000	3,038,000
July, 1922	2,486,000	450,000	2,936,000
Aug., 1922	1,794,000	539,000	2,333,000
Sept., 1922	2,244,000	606,000	2,850,000

(*a*) Excludes screenings and breeze. (*b*) Revised from last report.

Foreign Market And Export News

Continental Buyers Appear As American Orders Abate

Setback to British Producers Only Temporary—Falling Prices a Magnet —Export Situation Improves—French Markets Stronger—Wages of German Miners Raised to Boost Production.

British producers received only a temporary setback when the flood of American orders abated. The drop in prices which followed immediately attracted Continental buyers, and the export situation is steadily improving, with production being maintained and prices strengthening.

French markets also are stronger. Domestic coals lead the demand. The owners have averted a mine strike by temporarily withdrawing their recent demands for an adjustment of working time. Wage increases have been granted German workers in an endeavor to speed up production.

British Prices Rise as Export Demands Increase

Great Britain is finding an active market for the Admiralty coals and prices are firm. Lower grades are in oversupply, with weakened quotations. The output during the week ended Oct. 7 was 5,209,000 gross tons, according to a cable to *Coal Age*. This exceeds the previous high mark established for the week ended Sept. 2 when production reached 5,204,000 tons, and is 32,000 tons above the preceding week.

Operators in the north of England are optimistic. October production was sold up early in the month and sellers are only entertaining inquiries for November at full market values, and in some cases at fair advances on the present ruling prices. The demand is still mainly from Germany, though Italy and France are well in the market. Durham especially is doing good business and there have been considerable sales of coking coal for monthly deliveries over next year at 20s. per ton f.o.b., quantities ranging from 15,000 to 30,000 tons. Much of these sales are for deliveries during January and March.

Now that the peak of the United States call has passed conditions in the Welsh coal trade are more unsettled, though some brightening is evident during the past two weeks owing to a revival of the European demand, as a result of which the entire British coal trade has improved. The drop in prices following the filling of American contracts has had the effect of attracting Continental buyers, especially Germany, France and Italy.

The Scottish trade is marked by a general upward trend of prices, and round sorts have advanced by as much as 2s.@2s. 6d. per ton. The chief customer is Italy, though some cargoes are still being booked to the U. S. and Canada.

The miners have threatened to strike on Nov. 5 in Wales with the object of forcing the non-unionists into the ranks of the Miners' Federation. Extensive propaganda work is to be undertaken by the Miners' Federation with the object of bringing the non-unionists into line.

Business Slumps at Hampton Roads

Business continues to lag at Hampton Roads, with coastwise trade dwindling and bunker business scarcely holding its own, in the face of continued decline in prices. Export business is practically at a standstill.

While the supply of coal on hand is large, it is distributed through the trade in such small amounts that few dealers have any considerable cargoes on hand.

The general tone of the market is dull, and little prospect of immediate revival is in sight. Dealers are hopeful, however, of better business later in the fall when shipments by rail to the West begin to lessen.

World Production of Coal in First Half of 1922

In spite of the great strike in the United States the world's production of coal in the first half of 1922 was greater than in the corresponding period of 1921. The total output in the six months, January to June, 1922, according to reports collected by the United States Geological Survey, was approximately 568,600,000 metric tons.

Continued for twelve months, this rate of output would yield a total of 1,137,000,000 tons. Settlement of the strike in this country insures that world output in the second half of the year will be greater than the first, but even so, it seems unlikely that the total for 1922 will much exceed 1,180,000,000 tons. This is an increase over 1921, but a decrease of nearly 140,000,000 tons from 1920.

PRODUCTION OF COAL IN PRINCIPAL COUNTRIES OF THE WORLD, JANUARY-JUNE, 1922

Country	Metric Tons	Per Cent of Total
North America:		
Canada: all coal	5,532,583	.97
United States: all coal	189,660,000	33.40
Other countries	(a)	(a)
South America	(a)	(a)
Europe:		
Austria: Coal	86,164	.02
Lignite	1,587,756	.28
Belgium	10,707,480	1.88
Czechoslovak Republic:		
Coal	5,082,468	.89
Lignite	9,854,397	1.73
France: Coal	15,180,615	2.67
Lignite	380,169	.07
Germany: Coal	74,792,683	13.10
Lignite	65,953,605	11.60
Hungary	3,500,000	.62
Poland	c6,187,561	1.09
United Kingdom	121,664,875	21.40
Other countries	(a)	(a)
Asia:		
Japan	12,000,000	2.11
Other countries	(a)	(a)
Africa:		
Rhodesia	218,624	.04
Union of South Africa	4,144,521	.73
Other countries	(a)	(a)
Oceania	(a)	(a)
Total	568,600,000	100.00

a Estimate included in total. *b* Includes Saar and or months January-May the entire output of Upper Silesia. *c* Includes 1,775,000 metric tons (estimated) produced during June in Polish Upper Silesia.

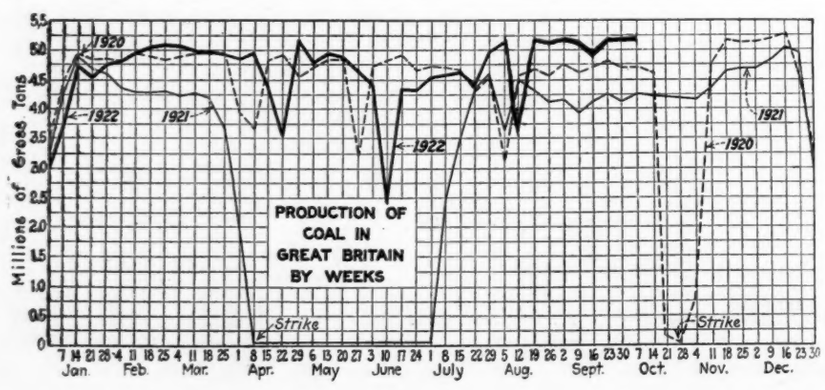
German Miners Get Wage Increase

The award conceding an increase of 150 m. per man per shift to the Ruhr miners for October has been made binding by the government, despite the owners' refusal to accept this award.

The Ministry has also decided that the wages of miners under the Rhenish Brown Coal Syndicate shall be increased to the same extent as those of the Ruhr miners, and that the increases for the other brown coal districts shall be in the following proportions of that amount: Duren district, 91 per cent; Mid-German Brown Coal Cyndicate, 92 per cent in the central district, and 90 per cent in the marginal districts; Bavaria, 94 per cent for the large pits and 90 per cent for the small concerns.

It is stated that to the end of September the Westphalian pits had not derived any advantage from the introduction of overtime at the beginning of that month, but only additional financial burdens, as only 52 per cent of the underground men have worked the additional hours. The average daily production is estimated to have increased by only 7,000 tons, or from 308,000 to 315,000 tons, whereas a daily advance of at least 30,000 tons was expected from the overtime system.

Production throughout Germany in August was 10,200,000 metric tons, as compared with 11,730,000 tons in the same month in 1921, which included 1,950,000 tons in East (now Polish) Upper Silesia. For the eight months ended with August the output amounted to 89,280,000 tons, as compared with



88,990,000 tons, including 13,890,000 tons in East Upper Silesia. Production of lignite in the eight months was 89,480,000 ton (80,550,000 tons in the corresponding period in 1921); coke 19,500,000 tons (18,490,000 tons); and lignite briquets, 19,510,000 tons (18,760,000 tons).

Production in the Ruhr region including the pits on the left bank of the Rhine, during the 26 working days of September is estimated at 8,200,000 tons as compared with 8,300,000 tons during the 27 working days of August and 7,900,000 during September, 1921.

Production of coal in the Ruhr region during the week ended Sept. 30 was 1,898,000 metric tons and in the week ended Oct. 7 it was 1,855,000 tons, according to a cable to *Coal Age*.

Strike of French Miners Is Averted

There continues to be a very active demand in the Nord and Pas-de-Calais fields, both for industrial and domestic coals. The demand for the latter exceeds the supply. In the Loire field there is also a strong inquiry for house coals, but industrials are rather quiet. Lorraine and the Sarre are now in a favorable position.

The strike fears have been dispelled by a letter written on Oct. 7 by the owners of the Nord and Pas-de-Calais to the Minister of Public Works, in which the owners withdrew their previous decision to reduce the wages as from Oct. 15, if in the meantime they had not obtained sufficient relief on their cost prices. The owners state that they will continue to assume the sacrifices in favor of their men, hoping that Parliament will so amend the Act of June 24, 1919, on working time in mines, as to permit the French collieries to adequately meet the competition of foreign coals.

FRENCH CONSUMPTION STATISTICS

Coal	August (Metric Tons)	1st 8 Mos. of 1922 (Metric Tons)
Production	2,665,137	20,750,635
Plus imports	1,766,670	14,733,120
	4,431,807	35,483,755
Less exports	172,263	1,138,501
Coal consumption	4,259,544	34,345,254
Coke		
Production	87,589	637,277
Plus imports	423,816	3,300,380
	511,405	3,937,657
Less exports	52,029	290,297
Coke consumption	459,376	3,647,360
Briquets		
Production	233,945	1,755,674
Plus imports	69,272	931,709
	303,217	2,687,383
Less exports	7,387	60,925
Briquet consumption	295,830	2,626,458

FRENCH COAL OUTPUT IN AUGUST

Nord and Pas-de-Calais	Devastated mines	679,395
	Non-devastated mines	614,626
Saint-Etienne		302,615
Lyons (Blanzy, etc.)		222,164
Clermont-Ferrand (minor fields of the Center of France)		105,269
Southern fields	Alais	153,952
	Toulouse	142,535
	Marseilles	58,204
Minor fields, West of France		10,596
Ronchamp mine (Nancy)		8,087
Lorraine		367,694
Total		2,665,137

FRENCH RECEIPTS OF REPARATION COAL

	July	August
Coal	363,673	255,850
Coke	403,256	344,360
Lignite (briquets)	21,983	40,861
Total	788,712	641,071

The decrease in coke shipments, which caused so much inconvenience to French blast furnaces was due to the unjustified reduction of Ruhr coke deliveries between Aug. 19 and 29. According to French Customs' returns, France received from Great Britain in August 854,089 tons of coal, as against 915,824 tons in July and an average monthly quantity of 983,181 tons during the first seven months of 1922.

FRENCH IMPORTS IN METRIC TONS

	August	1st 8 Mos., 1922
Coal from:		
Sarre	301,479	2,292,795
Great Britain	854,089	7,736,353
Belgium	170,817	1,598,635
U. S.	.....	23,255
Germany	411,562	2,624,140
Netherlands	28,717	454,244
Other countries	6	3,698
Total	1,766,670	14,733,120
Coke from:		
Great Britain	1,149	38,345
Belgium	27,404	332,898
Germany	370,516	2,797,797
Other countries	24,747	131,340
Total	423,816	3,300,380
Briquets from:		
Great Britain	13,836	103,235
Belgium	37,155	528,990
Germany	17,649	296,456
Other countries	632	3,028
Total	69,272	931,709

FRENCH EXPORTS IN METRIC TONS

Coal	172,263	1,138,501
Coke	52,029	290,297
Briquets	7,387	60,925

Coal Paragraphs from Foreign Lands

ITALY—The price of Cardiff steam first is quoted at 39s. 6d., according to a cable to *Coal Age*.

BELGIUM—On the coal market orders for all domestic description are numerous. Industrial sorts are also in demand and it is said that the orders received cover several months.

Production during August was 1,694,940 tons, against 1,669,290 tons in July. Stocks on Aug. 31 stood at 1,041,880 tons, as compared with 1,244,700 tons at the beginning of the month. During August, 245,040 tons of coke were produced against 227,590 tons in July, while production of briquets amounted to 216,610 tons, compared with 208,240 tons in July.

AUSTRALIA — Widespread cessation of work in the New South Wales collieries has already commenced, but the shipping community remains unperturbed. It is pointed out that there are hundreds of thousands of tons of small coal at the pit mouth, some of which has been accumulating for years.

INDIA — The Bombay bunker coal market is dull. The fuel oil market shows no change.

British Owners Bear Heavy Losses

The manner in which the Wage Agreement in the coal industry operates to the advantage of the men is seen in the certificate of the joint accountants setting forth the financial results of the South Wales collieries for last July, upon which wage rates for September were determined.

It is shown that the costs of production, i. e., the miners' minimum wage, stores and timber, and other costs, swallow not merely the whole of the sum allocated to the owners as their standard profits, but an additional amount of nearly £47,000.

The result of the ascertainment for July showed an available surplus in the case of South Wales of £6,566, which, under Clause 4 of the Terms of Agreement, has to be applied to the reduction of the deficiency of £56,840, representing the cumulative deficiency of previous months. Thus, there is left a deficit of £49,914, to be carried forward as a first charge on any surplus which may accrue in subsequent periods. What the South Wales owners have actually gained is this slight reduction in the sums recoverable by them. The payment of the minimum wage provided for in Clause 8 of the Agreement has, however, mulcted them in a heavy out-of-pocket loss. The proceeds in July are such that the owners have had to forego the whole of their standard profits and pay an additional £46,989.

The total sum sacrificed by the owners since last November in South Wales now amounts to not less than £2,334,000, the whole of which has to be borne permanently by them, since under the Terms of the Agreement it is not recoverable.

Hampton Roads Pier Situation

	Week Ended Oct. 12	Week Ended Oct. 19
N. & W. Piers, Lamberts Point:		
Cars on hand	1,460	1,208
Tons on hand	98,631	85,084
Tons dumped	91,821	104,906
Tonnage waiting	12,650	3,050
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	954	1,099
Tons on hand	57,450	68,400
Tons dumped	101,756	73,776
Tonnage waiting	9,500	13,684
C. & O. Piers, Newport News:		
Cars on hand	772	566
Tons on hand	38,600	28,800
Tons dumped	41,242	53,781
Tonnage waiting	1,600	450

Pier and Bunker Prices, Gross Tons

PIERS

	Oct. 14	Oct. 21†
Pool 9, New York	$8.00@$8.15	**$8.00@$8.25**
Pool 10, New York	7.50@ 7.75	*7.55@ 7.60*
Pool 11, New York	7.00@ 7.25	7.00@ 7.25
Pool 10, Philadelphia	7.25@ 7.75	7.25@ 7.75
Pool 11, Philadelphia	7.00@ 7.50	7.00@ 7.50
Pool 1, Hamp. Roads	7.00@ 7.40	*7.00*
Pools 5-6-7 Hamp.Rds.	7.00@ 7.40	*6.75*
Pool 2, Hamp. Rds.	7.00@ 7.40	*7.00*

BUNKERS

Pool 9, New York	$8.30@$8.50	**$8.35@$8.60**
Pool 10, New York	7.85@ 8.10	*7.70@ 7.95*
Pool 11, New York	7.35@ 7.55	7.35@ 7.55
Pool 10, Philadelphia	7.75@ 8.25	7.75@ 8.25
Pool 11, Philadelphia	7.50@ 8.00	7.50@ 8.00
Pool 1, Hamp. Rds.	7.15@ 7.50	*7.10*
Pool 2, Hamp. Rds.	7.15@ 7.50	*7.10*
Welsh, Gibraltar	40s. f.o.b.	40s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	50s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.
Welsh, Algiers	41s. 6d. f.o.b	41s. 6d. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	65s. f.o.b.
Welsh, Madeira	45s. 6d. f.a.s.	45s. 6d. f.a.s.
Welsh, Teneriffe	43s. 6d. f.a.s.	43s. 6d. f.a.s.
Welsh, Malta	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, Las Palmas	43s. 6d. f.a.s.	43s. 6d. f.a.s.
Welsh, Naples	42s. f.o.b.	42s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b
Welsh, Singapore	52s. t.i.b.	52s. t.i.b.
Welsh, Constantinople	50s. f.o.b.	50s. f.o.b.
Welsh, St. Michaels	50s.t.i.b.	50s. t.i.b.
Welsh, Alexandria	40s. f.o.b.	40s. f.o.b.
Welsh, Port Said	51s. 6d.f.o.b.	51s. 6d. f.o.b.
Welsh, Oran	40s. f.o.b.	40s. f.o.b.
Welsh, Fayal	50s.t.i.b.	50s. t.i.b.
Welsh, Dakar	46s. 6d. f.o.b.	46s. 6d. f.o.b.
Welsh, St. Vincent	46s. f.a.s.	46s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Oct. 14	Oct 21†
Admiralty, large	27s.6d.@28s.	27s.6d @28s.
Steam, smalls	16s.@16s.6d.	16s.@16s.6d.
Newcastle:		
Best steams	25s.6d.@27s.	**27s.**
Best gas	23s.6d.@24s.	**24s.@25s.**
Best bunkers	22s.6d.@23s.6d.	**23s.6d.**

†Advances over previous week shown in **heavy type**; declines in *italics*.

North Atlantic

Large Consumers Active; Others Buy Hand to Mouth

Despite Low Stocks and Car Scarcity, Bargain-Hunting Tactics Are Common—All but Best Coals Sell Off Under Pressure—British and Southern Fuels in Less Demand.

Buying activity is still confined to the railroads and large consumers. Others are still on a hand-to-mouth policy and many have no stocks worth mentioning. Cars are short, but these consumers refuse to worry about the situation and are employing bargain-hunting tactics to procure their current needs. Only the best coals are readily salable—the others are selling off under the pressure.

Late receipts of British coals are still offered at low figures, but with heavier home production these sellers are having a hard time to dispose of their free cargoes. Southern coals also are less in demand. Rail deliveries are slow but enough coal is moving to more than fill all current demands.

BALTIMORE

While the car supply is at present running as low as 15 and 25 per cent, and winter approaches rapidly, the coal trade here is faced by the rather unusual condition of decreasing demand. In normal times a condition of car supply such as has existed for the past two or three weeks would have jumped the price. Instead, there has been a decline of $1@$1.50.

The seat of the trouble probably lies in the fact that, while these prices were nowhere near as high as they have been on several occasions since the war, they were still high enough to make some purchasers hesitate in stocking against fall and winter needs. Then came a slide in prices and instead of the lower quotations bringing an increased buying call, the buyers seemed to hold off for still lower quotations, and the very favorable prices of this time have apparently failed to satisfy them.

The light movement on the railroads is shown by the fact that fuel loaded on private cars and placed on sidings for shipment to Baltimore has in some cases been held up for three or four days because the railroads did not have sufficient coal cars loaded to make up a full train for movement to a particular terminal.

PHILADELPHIA

The claim is being freely made that the car supply in the soft coal region is at the lowest ebb it has reached since mining was resumed at little over a month ago. At this time there is an influx of assigned car orders for the loading of railroad fuel. It is believed the railroad companies have urged the issuance of these orders, as they realize better than any one else the conditions which are confronting the trade. There is no question that the roads realize that the purchase of fuel at the ruling prices is really a good buy, and they are now sharing in the production with the utility plants and other large consumers.

Prices are still easy, with just the slightest tendency toward a firmer condition. One house which has endeavored to make a survey of the field has reached the conclusion there is at this time not more than a five weeks' supply of coal on the ground in this district. This is including the stocks of the big consumers and striking an average for all. They claim to have learned of more than an occasional instance of smaller users having less than two weeks' supply on hand, and a few actually waiting for a car en route.

As yet there is no diminution in that class of consumer who prefers to wait for lower prices before trying to accumulate a surplus. It may be useless for such concerns to even try to get stock ahead quickly, as they would only succeed in running up the market.

CENTRAL PENNSYLVANIA

Prices are lower now than they have been for a long time. With the exception of the higher grades, they are below the fair prices fixed by the state fuel commission following the termination of the strike. Pools 11 and 18 are selling $3.25@$3.50. Pool 10, $3.50@$4; Pool 9, $4@$4.50, and Pools 1 and 71, $4.50@$5.

Production reached the high-water mark in the week ended Oct. 15, when loadings were 19,900 cars. The operator's associations in the district have asked the I. C. C. to place a service agent in the field to investigate the placing of cars by the Pennsylvania. It is claimed that certain sections have not received their share and the operators are insisting that the matter be straightened out at once.

NEW YORK

Lower temperatures did not result in any improvement here. Buyers held off and no reasonable offer could induce them to increase supplies. Quotations as a result of the easiness of coal, indicated a downward tendency.

In this harbor on Oct. 20 there were 1,619 cars, which was a slight decrease from the number on hand earlier in the week. In addition there was considerable British coal which was being freely offered at around $7, although it was reported that some had been offered at lower figures.

Exporters of foreign fuel who brought cargoes here without orders for it are finding it difficult to dispose of their holdings. During the week ended Oct. 20 there were reported as arriving in New York harbor six vessels carrying 37,757 tons of coal and one vessel carrying 3,305 tons of coke.

Just now consumers are getting all the coal they need and are not carrying as large stocks as usual. They evidently feel they will have no trouble in getting whatever coal they will need readily and are not worrying about the future.

Southern coal receipts here are smaller. Quotations run about $7 f.o.b. Hampton Roads or $8 this harbor.

B. R. & P. mine run coals are quoted $3.25@$3.50, and slack around $3.50. Other quotations include low sulphur gas coals, $5@$5.50; and high-volatile slack, $3@$3.50.

UPPER POTOMAC

From a labor standpoint, conditions are now almost normal in the Upper Potomac and are gradually improving in the Georges Creek field. During the third week of October, the demand was on a somewhat larger scale than had been the case during the preceding week and that had the effect of hardening prices somewhat.

FAIRMONT

Signs were not lacking at the outset of the third week of October to indicate that the demand was a little stronger, with railroads seeking larger tonnages. The mines in the northern part of the state as a whole, are still seriously handicapped by a car shortage. Western coal was still being moved by way of Charleston.

South

BIRMINGHAM

There has been no change in general trade conditions. Demand for steam coal is only moderately good, such activity as exists being due to some extent to the restricted supply. Although production is being maintained around 345,000 tons per week, shippers are so far behind on contract deliveries, due to the long existing car shortage, that the supply available for spot requirements is not large. The call for domestic is urgent and cannot be supplied under present operating and transportation conditions.

Quotations have shown no material change, minimum prices ranging 25c.@50c. under the maximum schedule on steam grades, with lump bringing the peak figure allowed. For some weeks past domestic grades of the better quality sold to interstate trade have been bringing from $5 to as high as $7. However, Alabama operators have agreed with the federal fuel distributor that they will hereafter adhere to the state schedule of prices for all shipments, which range $3.45@$6.

Car supply for the past week has been about 50 per cent. Slight improvement is expected account of repaired equipment which is gradually being restored to service, but the situation will not be relieved to any great extent without the addition of new cars and a return of the equipment now in use on foreign lines.

VIRGINIA

The field has been unable to maintain its production, largely because of losses sustained on the N. & W. and the N. & N. On other roads mines have increased their output somewhat. There is a little stronger demand in Eastern markets.

Anthracite

Congestion of Steam Loads Now a Disturbing Factor

Production of Larger Sizes Threatened —Brisker Domestic Demand with Colder Weather, Retailers Hard Put to Maintain Yard Stocks—Independents Forced to Distant Markets to Secure High Prices.

Inability to dispose of steam sizes is a disturbing factor which threatens to affect the production of the larger coals. Some companies are running these to storage and various railroad embargoes have been placed against their movement.

The colder weather has brought about a more urgent demand for domestic coal and retailers are barely able to maintain their yard stocks. Independent coals must seek Western and other more distant markets to obtain figures much above the so-called maximum price, as the East will not absorb much tonnage at exorbitant figures.

NEW YORK

The question of how to keep down the accumulation of steam sizes continues to hold the attention of the trade. The terminals are filled and there is estimated to be nearly 100 loaded boats lying in the harbor. Some of the companies are dumping the small coals at the regular storage yards. Embargoes have also been placed on shipments to some of the local piers.

Retail dealers have been getting sufficient tonnage to keep them busy and nearly all consumers have had at least part of their supply delivered. So far as New York goes, it is believed that there will be no extreme shortage and that everybody will be able to get coal.

Independents are not finding it so easy to unload their product on local retail dealers as they did a few weeks back. Along the line and in the West the problem may not be so difficult.

Pea coal is easier and some dealers who have been willing to take fair-sized tonnages in order to get the larger coals have accumulated quite a supply. Stocks of buckwheat are not as large as rice and barley. There were some offerings of washery steam sizes here during the week on a mine basis of $2.25 for buckwheat, $1.90 for rice and 90c. for barley.

PHILADELPHIA

The pinch of fuel shortage is being much felt at this time, following the arrival of actual fall weather. The yards have less coal than at any time since the first shipments came in after the strike. Some of the larger shippers are no doubt spreading their production around, with territory at a distance now getting their turn. If coal had been kept moving here at the same rate it started there would have been sufficient at least to meet present weather conditions.

Mine prices seem now to be fairly well fixed, the companies continuing at their former figures, and with most of the large independents at $9.25. There are, however, reports that quotations on family sizes up to $12 are yet being made, but the general attitude of the retailer is to go without coal rather than pay extreme prices.

There is also some annoyance in the car supply, and while it is not believed that any time has been lost the number of box cars delivered for loading is growing.

Steam sizes have not improved, but it is hoped with better weather conditions that the surplus will soon be absorbed. There is still buckwheat offering at $3.50, but the bulk of the excess tonnage is now selling nearer to $3.75. Barley continues troublesome. Should the shortage of family sizes continue much longer it is quite likely that a fair quantity of buckwheat will be taken in by the retailers, who up to this time have looked with anything but favor on this size.

BALTIMORE

Appeals for consumers to take bituminous as a substitute are falling on deaf ears for the main part. Some of the imported English coal has gone into cellars of homes, but there seems to be a general refusal to take much of the American product. The Maryland Fuel Distribution Committee is pointing out to householders that they should use soft coal when they cannot get anthracite.

The hard coal dealers are up to their necks in work. While some coal is being received it is nothing like enough for urgent demands. Receipts are quickly absorbed and still dealers are harried on every side by insistent customers.

BOSTON

Low temperatures have caused increasing anxiety over the supply of prepared sizes. In view of the relatively short time since mining was resumed the shippers as a whole have done amazingly well. Conditions have been favorable, both water and rail, for heavy movement and thus far New England has fared well.

Dealers are confining themselves to small deliveries in the effort to make their slender stocks go as far as possible. In most cities prices have not been advanced over spring figures.

BUFFALO

All distributors and retailers are complaining of no coal and the weather is all that seems to be in the interest of the consumer. The fixing of a price for independent anthracite seems to have antagonized that interest entirely. All shippers claim to be living up to the price, but there is report of more or less claiming to be out of coal when orders are given. Then the shipper will say he can get coal for three or four dollars more.

The movement by water has increased considerably, but is not up to normal yet. Shipments last week were 117,600 net tons, of which 53,300 tons cleared for Duluth and Superior, 40,800 tons for Chicago and 23,700 tons for Milwaukee. Freight rates remain at 40c. to Duluth, 50c. to Milwaukee and 50 @55c. to Chicago.

ANTHRACITE FIELDS

Things are still peaceful in the anthracite region. Production seems to be on the increase. There is, however, much difficulty in marketing the steam sizes and some of the companies are storing these grades.

The car shortage is not affecting the region as much as it has been in the past and it seems as if this difficulty will soon be done away with.

West

KANSAS CITY

It is difficult to understand the coal situation. Demand is strong for all grades and there is recession in prices for some domestic nut coal. The price for nut has held firm at $6 until recently when it was reduced to $5.50 and mine run from $5 to $3.50@$4. This occurred right at the beginning of winter demand. Deliveries are slow on account of transportation and some of the retail yards are bare of any kind of coal with tonnage in transit that has been out of the mines for over 30 days.

A great many steam plants that put in oil burning equipment are changing back to coal and a great many residences who have burned nothing but coal heretofore are changing over to oil burning because prices for domestic grades are high and the steam grades are low.

Prices are as follows: Kansas lump, $6; Kansas nut, $5.50; Kansas mine run, $3.50@$4; Kansas slack, $2.50.

DENVER

A price war in Weld County between two small coal companies has reduced lignite coal in northern Colorado 90c. @$1.50 per ton. Some operators declare that coal is selling at $2.25@$3.

Mild weather has broken the cold spell which struck Denver and the state for three or four days. The car shortage is still a serious problem, even though the city and surrounding communities have not been suffering on account of a lack of coal, being on the main lines of transportation and using system cars which are never routed out of the state.

SALT LAKE CITY

The coal business is quiet. Operators have nearly caught up on their orders and will soon be looking for business unless the weather turns cold. The Grand Jury, called to investigate coal prices, is still in session and there is no indication yet as to whether they will bring in any indictments. No one in the business thinks they will. The public is indifferent.

The steel companies are getting ready for business and many believe Utah is in for a big industrial era. Crops have been good this year with fair prices and transportation facilities, on the whole.

Chicago and Midwest

Steam Market Continues To Soften Perceptibly

Domestic Demand Swells Day by Day and Car Supply Is No Better So Screenings Remain a Drug—Railroads at St. Louis Confuse Service.

Heroic efforts to inject some semblance of life into the steam coal trade are futile. With the slight stiffening of an already firm domestic market, the buyers of steam sizes were more obdurate than ever last week in their belief that screenings must drop lower before anybody will buy them cheerfully—so they obliged in some quarters and dropped. Carterville screenings on the St. Louis market got down to $2.50 and Standard to as low as $1.25. In Chicago a $3-bottom under southern Illinois screenings was decidedly shaky while Standard slid under $2 and central Illinois approached that figure. There remains so strong a feeling that domestic prices are due for a fall in spite of all the coal man's logic that restricted allotments worry nobody. Small deals suit everybody.

Railroad service is not noticeably better. In Indiana and southern Illinois two days' working time a week continues the order of the day with certain localities sometimes attaining the dizzy height of half-time. Thus operating costs per ton are kept high. Rail service for loads is fairly good in most parts of this region—even up into the Northwest which is getting a fair volume of Illinois and Indiana coal—but at St. Louis there is something verging upon a breakdown by the Missouri Pacific and Frisco lines in their terminal handling of coal equipment.

CHICAGO

Snappy weather made the domestic business a little more earnest early in the week and even awakened some other trade sufficiently to bring in a better inquiry for steam but the succeeding warmth took all the crispness out of the whole situation. Retailers are taking all the large sizes they can readily get and are placing their supplies in small lots—which is enough to satisfy everybody since there is still a general belief that coal will be down by the first of the year—and steam buyers look on indolently, picking up most of the screenings that are offered, but doing it with such nonchalance that the market level from several fields continues to soften.

Standard district coal, always at the bottom, is selling down to $1.75 or even a little lower on occasion, central Illinois stands around $2 and the prime coal of the southern counties has a hard time maintaining its $3 minimum. Some of it gets into distress almost every day and is unloaded at a shade under that in small lots. Naturally lump holds up well but there is no rushing up of the price.

Car supply is little if any better so it is argued that a spell of real cold is going to take so much coal for heating plants that big steam users will have to bid up to get any screenings at all. The buyers, however, calmly await such a period, holding that heavier shipments of domestic will force production of more screenings at a price certainly no higher.

Practically no smokeless is reaching this market now. A thin stream of anthracite is coming in, but no vast stores of such coals are expected. The hard coal retail price is mounting.

WESTERN KENTUCKY

Prices are lower on steam coals, due to slow buying and lack of stocking orders from industries, along with the fact that national production is increasing, and competition for business is beginning to be felt. Freight rates prevent movement at the present time to districts which were large buyers during the period of shortage. Mine run has worked off steadily until it is now quoted $2.25@$2.65, and some for less. Nut and slack is $2@$2.25, and lump, $4.75@$5.25, but with any large demand it would probably advance.

Better river stages are permitting larger movement of coal by water to the lower river markets. Most of the business of the western Kentucky field is now south of the Ohio River, moving to Louisville, Nashville, Memphis and the rural districts. Car supply continues short and is the principal factor in maintaining prices.

SOUTHERN ILLINOIS

As the demand for lump and egg increases there seems to be a falling off in the movement of steam sizes. This has become so pronounced that several mines in the Carterville field have had trouble moving steam coal and have cut the price from $5.50 to $4.25 to steam plants in isolated cases, while screenings are down to $2.50 in some instances. Working time averages two days a week, with some mines getting a trifle better.

Somewhat similar conditions prevail in the Duquoin field, except that egg is a little more plentiful. In the Mt. Olive territory the mines are getting about three days a week, but most of the equipment furnished is the hopper-bottom variety that many retailers cannot unload and this has forced the steam market, especially from egg size down, so that at all mines there is a surplus. This has caused some idleness because the railroads will not furnish empties while there are no-bills on track.

In the Standard district from egg size down there is a surplus, and a scarcity of lump. Mines in this district get from two to three days a week, but are handicapped on account of hopper bottom equipment.

Railroad tonnages from all three fields have been fairly good, but the railroads are not storing any reserve coal. Many mines in this territory have been forced into suspension on account of no-bill screenings and the condition of the steam market is still poor.

LOUISVILLE

Eastern Kentucky, with a car supply steadily at below 20 per cent, is not having much trouble in disposing of production, with the result that prices are fairly firm. The Lake movement along with demand for gas coal, and movement to utility and byproduct plants, is accounting for the bulk of production. Screenings are maintaining values at around mine run prices, due to comparatively small production on account of general lack of lump orders.

It is admitted that with the Lake season nearing a close it will not be long before a larger tonnage will have to be disposed of through other channels, which will have a tendency to break down prices, and force operators to make more lump coal and offer it at lower prices.

Prices are somewhat weaker than they were, especially in western Kentucky. That section is quoting lump, $4.75@$5.25, nut, $4.25@$4.50, screenings, $2@$2.25 and mine run, $2.25@$2.65. Eastern Kentucky is quoting prepared at $6.25@$6.75, mine run, gas, $4@$4.50, non-gas, $3.50@$4.25 and screenings, $4@$4.25.

ST. LOUIS

A little seasonable weather has caused a fairly good domestic demand, principally for Mt. Olive. Very little Carterville is coming in, but Standard movement is better on account of the scarcity of Mt. Olive and Springfield district contributes some. Very little anthracite, no smokeless and no Arkansas has been received and there is a minimum tonnage of coke available. Domestic orders are for small quantities, indicating a continuous call for coal throughout the winter season. Domestic country shows some improvement, but it is scattered and is not in the volume that was anticipated some time ago. Country newspapers are expecting a decrease in the price of coal, which is delaying buying generally.

Locally steam is not good. Steam users are not storing much and the market has practically gone to pieces. Country steam is in somewhat the same condition. Steam buyers figure that with colder weather and an increased production of domestic sizes that steam must necessarily come down to rock bottom and they are waiting until that time. Railroads are reported as having only a day-to-day tonnage available.

The Terminal conditions are unusually bad. At one time in the past week the Frisco had 750 cars it could not receive from connecting lines. The I.C.C. ordered more than half of the Missouri Pacific local switch engines to the repair shops and that road had to borrow motive power from the Terminal. The Frisco is now in the same position and in a general way the local roads are in bad shape. Doubtful embargoes are in effect even on coal.

Eastern Inland

Industrial Demand Gaining; Output Matching Demand

Market Still Weak—Prices Steady Save on Domestic, Which Feels Cold Weather Stimulus—Fixing of Retailer's Margin in Ohio Complicates Situation.

Industrial demand is increasing slightly. The market is still weak, but production is becoming more evenly balanced with current demands. Prices are not quotably higher except on domestic sizes, which are feeling the effects of cold-weather demand.

Price fixing by Ohio on coal mined in that state is causing considerable tonnage to be shipped to outside markets. The retail situation also is confused by the state ruling which regulates the dealer's margin.

Lakes and railroads are taking much of the current production and little free coal is available. This is gradually strengthening the market as the shortage is apparent with the slightest upturn in demand.

PITTSBURGH

There is no material change in the rate of production. Supplies appear sufficient to meet regular requirements of the line trade together with the Lake trade. Car shortages are practically universal, circumstances as a whole indicating that there would be a surplus of coal if the railroads were able to supply all the cars ordered.

Consumers are showing no disposition to stock coal and evidently expect lower prices. The great bulk of current requirements are being met by a regular movement between mines and regular customers, subject in many cases to weekly or monthly price adjustment according to the state of the market, rather than by outright sales and purchases. This condition leaves little demand for the open market.

The market is not closely quotable, on account of there being quite a price range, according to quality. Ordinary steam coal is generally at $3@$3.25, with occasional transactions at $3.50. A fair grade of byproduct can be picked up usually at $3.50, while good gas runs up to $4 for mine run, with 50c. extra for screened. Domestic 1¼-in. lump is $4.75@$5.25, according to grade.

CLEVELAND

The market has begun to stiffen. Prices are higher than 10 days ago. Cooler weather and increasing car congestion have combined to bring about a firmer market. Some of the large coal carriers, which were furnishing a supply ranging from 70 to 100 per cent have dropped to a level of 35 to 50 per cent in the last few days. In view of these things a fuel shortage seems almost inevitable in this district. This is the view of Frank H. Baer, traffic commissioner of the Cleveland Chamber of Commerce, who is serving in the state fuel administrator's office.

In addition to firmer prices, evidence of the turn in the market is found in the fact that many large dealers and operators report they have more orders on their books than they can deliver in three weeks. Because of the low price of $3.56 a ton, fixed by the state fuel commission, for No. 8 mine run, much of this fuel is moving out of the state.

There has been a distinct quickening in household demand. The colder weather has caused this. Pocahontas is still scarce and hard coal is coming into the city in driblets. Under the new state regulations retail coal prices will fluctuate daily. In the past dealers have averaged their costs so they could quote prices for future delivery. They must now base their prices upon the cost at the mine on the day of shipment from which the particular order is filled.

COLUMBUS

With colder weather at hand domestic demand is increasing. Producers and jobbers have many inquiries but since Ohio prices are regulated dealers have to be content with buying West Virginia and Kentucky grades as well as Ohio-produced mine run. Practically no Hocking or Pomeroy lump is going to Ohio dealers, producers preferring to sell outside of the state at higher prices. Retail prices as fixed by the administrator allow a margin of $2.20 over the cost at the mines and freight.

There is a slightly improved demand for steam grades with buying only for immediate needs. None of the larger consumers is showing a tendency to stock up under present conditions, although a few manufacturers are coming into the market. Lake trade is still active although car shortage and congestion is reducing the tonnage.

The car supply is growing less and this is reducing the output in all Ohio fields. The supply of cars in the Hocking Valley last week was about 40 per cent and in Crooksville and Cambridge somewhat less.

EASTERN OHIO

While the field is showing some improvement in output yet because of the continued inadequacy of transportation facilities some apprehension has been expressed by members of the Ohio fuel administration that a famine is in prospect. During the week ended Oct. 14 this district produced 313,000 tons or 50.5 per cent of potential capacity.

With approximately 30 per cent of current output being drawn for railroad fuel and some 60 per cent of the remainder going to the lower ports for trans-shipment to the Northwest, it may readily be seen that at the restricted rate of operations the volume of "free" coal finding its way into the open market cannot be of any considerable magnitude. Steam users are daily becoming more concerned and domestic consumers are beginning to feel more apprehensive. Thus a more insistent demand has developed. Difficulty is being experienced in satisfying the demand. With the exception of slack, which is soft and in abundance because of heavy shipping of ¾-in. to the Lake, other grades are scarce in the open market. Other spot prices conform to maximum figures set by the state authorities. Coal from West Virginia Panhandle is quoted in the open market at approximately the same f.o.b. mine prices. Very little West Virginia or eastern Kentucky coal is arriving as yet because of the transportation situation. It is reported that slack and nut and slack from these mines range $5@$5.50, mine run, $5.50@$6, lump sizes, $6 and up.

Receipts of bituminous coal at Cleveland during the week ended Oct. 14 were 1,471 cars, 360 cars under the preceding week. Of this total 1,210 cars were for industries and 261 for retail yards.

DETROIT

Bituminous coal is coming into Detroit in fair amount, though the average daily receipts fall short of the quantity which dealers estimate as necessary to meet the requirements. Industrial plants seem to be releasing orders only when compelled to replenish their supply for current needs.

Retail dealers, also, are inclined to proceed cautiously in the matter of building up yard stocks. The waiting attitude of their customers impresses jobbers and wholesalers as an indication of the expectation that coal will be obtained at lower prices after a while.

Hocking lump and egg is quoted at $5.50@$6, mine run, $3.75@$4, nut, pea and slack, $3.25@$3.50. Fairmont ¾-in. is $5, mine run, $4.50@$4.75, slack, $4.50. Pittsburgh No. 8 ¾-in. is $5, mine run, $4.25@$4.50, slack, $3@$3.75. West Virginia and Kentucky lump and egg is $6.25@$6.50, mine run and slack, $4.50@$4.75. Smokeless lump and egg is held at about $8.50, mine run, $6.50 @$6.75.

BUFFALO

Some shippers report the market stronger, but it is hard to find any advanced prices. The consumers are buying as they please. No sort of warning of coming storms or still scarcer car supply can scare them.

The price was seldom as varied as it is now. Mine owners complain as much as ever of car shortage, but in fact that is all that is saving them from a total collapse of the market.

The weather has done what it could to check the market. The jobbers know this and confess that it has so far done much toward spoiling their arguments. Quotations are: $5 for Youghiogheny gas; $4.50@$4.75 for Pittsburgh and No. 8 ¾-in. steam; $4@$4.25 for Allegheny Valley and other mine run; $3.25 for slack.

NORTHERN PANHANDLE

Mines are much handicapped by their inability to ship as large a tonnage to Western markets as the market would permit, owing to congestion on roads. It has been found particularly difficult to get coal through to the Lakes. There is a more pronounced demand for mine run and prices are advancing a trifle.

Northwest

First Cold Worries Few Folks Around the Lakes

Considerable Flow of Cargo Coal Both Hard and Soft Allays Worst Fears but Fuel Is Doled Out Carefully—Steam Prices Soften.

The Northwest finds little cause for worry in spite of the inevitable domestic rush that was started by the first cold snap. Prices on domestic are not hiking even though the supply does not equal the demand. Heavy Lake shipments continue and it is probable they will until Dec. 1. Rail coal from Indiana and Illinois is coming in in fair volume. The general result is nobody is contracting and steam prices are headed downward.

Hard-coal cargoes already in have been doled out in small quantities but even that does not cause much concern over the future. It certainly has not set up a demand keen enough to take out of dealers' yards some low-grade soft coal bought at fairly high prices last summer. Both dealers and dock men have had so much experience buying high-priced coal for protection only to have it left on their hands at the end of the season that they are not stocking heavily now.

MINNEAPOLIS

A flurry of "squaw winter" with snow started a rush of retail business to the coal offices, but, with the passing of the storm, came an end to the rush. The hard coal situation has not changed particularly in some weeks. The fuel commissioners have pledged that a certain tonnage will be supplied the Northwest. Minneapolis is to get 122,032 tons against 203,386 tons last year. St. Paul is to have 85,470 tons against 142,450 tons last year. This may be decreased by transportation difficulties, although it is hoped to move it by Lake and rail or all-rail. It now appears unlikely the Northwest will get over 30 per cent of the normal anthracite tonnage.

The soft coal situation is settling to some extent. There is now enough for any present and early future need, and buyers are not at all worried. The winter's requirements for the docks is being scrutinized carefully by dock men. They see that there is a good tonnage of all-rail coal coming into these cities, despite the car shortage, and are going cautiously in building up their stocks. Already they are having difficulty in getting the price they must ask, and they anticipate the possibility of a larger tonnage having a still further depressing effect.

So October is showing a decline in tonnage moving to the docks, as compared with September. Some of this is due to transportation difficulties and some of it to dock operators holding off from buying. There is likely to be an increased all-rail tonnage later on so that the dock store of perhaps 4,000,000 tons, plus what comes from the all-rail fields, should serve to carry the Northwest through the winter.

MILWAUKEE

Frosts and some snow have increased the anxiety throughout Wisconsin regarding the winter supply. Dealers report an increasing domestic demand. Steam is slow, however. The State Fuel Commission announces that West Virginia smokeless producers have set a maximum of $6 at the mine for prepared sizes, and Pennsylvania anthracite has been fixed at $8.50. With these figures as a basis, the commission expects to be able to check profiteering. Prices on both hard and soft coal have undergone no change since Oct. 1. No coal at premium prices has appeared in this market yet.

Hard coal must move more freely than at present, however, if this schedule is to be realized. Thus far in October, eleven cargoes of anthracite, aggregating 86,952 tons, and fifty-three cargoes of soft coal, aggregating 473,416 tons have been unloaded at the various yards. The season's receipts by cargo to date now total 87,652 tons of anthracite, and 1,764,371 tons of soft coal. Last year during the same period 815,622 tons of anthracite, and 2,149,410 tons of soft coal were received.

DULUTH

The first snow has fallen and cold weather seems to have definitely set in. Householders are straining every effort to get coal into their bins, and dealers find it impossible to make local deliveries.

During the week forty-two cargoes arrived at the port. Four were of anthracite. Twenty-four are on the way of which four more are hard coal. This, it is considered, will relieve the situation considerably, as the volume reported coming from lower ports indicates that the movement will keep up.

Shipments throughout the territory are excellent. Duluth is in a good way for cars, as grain shipments to the harbor leave many empties to take coal back. Despite this there has been an accumulation since Oct. 1 of about 600,000 tons more on the docks.

A heavy call for Pocahontas has about wiped out the supply. Prices on hard coal remain the same as quoted last week. The market in bituminous coal is weakening at the usual point—screenings. These are quoted at $7 for Youghiogheny and splint against $7.50 last week and Hocking screenings are 50c. below this. Prices for lump and run of pile remain the same but are expected to drop. Railroads are not buying much.

New England

Big Consumers Await Events; Some Smaller Ones Buying

Business Is Light, Close Canvassing Being Necessary to Place Tonnage—Hampton Roads Coals Sluggish—All-Rail Fuels Quoted Lower to Maintain Output.

Only here and there is the current market at all responsive to selling efforts. The larger buyers have accumulated some reserves and have settled down to await developments in November and December. The various trade factors are enjoying only light business in consequence, and what tonnages are placed are the result of close canvassing.

A few relatively small users have concluded that present prices are about as low as they could reasonably expect, and these are now beginning to take on the coal they have been talking about buying since early in July. Hampton Roads coals are sluggish and all-rail fuels are quotably lower in an effort to maintain production.

The $3 level at the mines has been touched. Locomotive coal of fair grade has been offered at that figure per net ton, but no sales have as yet been reported. The present all-rail tariff to New England points is still so high that coal within reach of Tidewater still costs less by the water route. Coastwise freights are now on what is considered practically a minimum basis on present costs, and when the delays in rehandling at Boston, Portland, and Providence are cleared up it is likely that receipts of Hampton Roads coals will measurably increase.

Cargoes of British coal continue to arrive, but in much smaller number. A few of the larger corporations profess to be well satisfied with their purchases, and are quoting quality and reasonable prices of these grades as an argument to force down the price of home coals. Some of the high volatiles that originate on the other side have given fair satisfaction as railroad fuel, and renewed shipments have been offered recently at a range of $6.50@$7 delivered alongside.

Buyers in general seem little disturbed over the threatened car shortage. Strenuous efforts to sell coal the past three months have convinced most consumers that orders will be even more scarce than cars, provided cars are to be short as predicted.

In railroad circles there is more or less discussion of "assigned cars." There are operators who see in this a deliberate attempt to force prices to still lower levels, and without doubt any such more would be resisted under anything like present conditions.

Cincinnati Gateway

Unsettlement Continues, Due to Diverse Causes

Some Steam Coal Sacrificed to Escape Demurrage—Clog in Movement Reported—Outside Competition a Pressing Factor—Price Fixing Boosts Retail Quotations.

Outside competition, shortage of cars and a soft market have been causing a continuation of the unsettled conditions at the Cincinnati gateway. Rejections have grown to the point where some steam coal is being sacrificed where it had begun to pick up demurrage. These cars in distress have sold down to $3, but that is not nearly as ominous as the reports coming in from Russell, Ky., and Portsmouth, Ohio, to the effect that the quick movement is beginning to clog there.

The outside competition, perhaps, has the greatest effect upon this market and reports that byproduct and gas coals from the Pittsburgh belt were being offered 50c.@75c. cheaper than the Kentucky and West Virginia products caused anxiety. On the other hand, reports from companies handling high-grade coals show that the slump has not amounted to more than 25c. a ton on the week.

LOW VOLATILE FIELDS

New River and The Gulf

New River producers were unable to take advantage of the better Western market for prepared owing to an embargo on the C. & O., which for a few days diverted more coal to Eastern markets and to Tidewater, where the demand has been none too strong.

Gulf producers also had to ship all their product to Eastern markets, where there was a little better demand, although a surplus was reported at Tidewater. Little tonnage was available for spot sales, due to the large number of contract orders to be filled in the face of the car shortage. Prepared grades were still high, with no prospect of an increase in the supply.

Pocahontas and Tug River

Pocahontas production is still being seriously curtailed by the inability to secure an adequate supply of cars, losses amounting to nearly 400,000 tons per week. The output is not much more than sufficient to take care of regular customers. Little smokeless has been reaching markets in the West but notwithstanding the scarcity of smokeless, prices as a rule have been about on a Hoover level.

Tug River mines are slowlv recovering from a slump in production brought about by numerous embargoes and a general shortage of cars. Even making allowance for an improvement in transportation conditions, the supply is still short of the demand, so much so in fact, that producers have not been quoting prices.

CINCINNATI

The smokeless situation continues much as it has been. The Pocahontas producers, however, have finally been able to get smaller equipment to their mines, which will result in a heavier tonnage being shipped to the West. Some producers say that they have about caught up with their contract orders.

The situation of the steam coals is the weakest on the list. Customers who were taking anything that looked like coal are now discriminating and demanding quality. Lake buying has been a little better with the end of the season in sight and the automobile and steel people seem to have no limit to their capacity for good coal.

The retail situation has been muddled by a ruling from the Ohio authorities fixing the price of Pocahontas at $11.34. Dealers were selling this lump at $10.50@$11 and mine run at $9.50. Splint lump is ordered sold at $10.39@$10.49, whereas the dealers had been selling it at $8.75@$9.60, and the slack, $7.25@$8.50.

HIGH-VOLATILE FIELDS

Kanawha

Claims of C. & O. officials that they were able to furnish open-tops to the extent of 60 per cent of normal were not being borne out by loadings during the third week of October. Mines were not securing more than a 30 per cent supply. The Western market was closed to shippers for several days by an embargo on all coal destined for points west of Handley and there was nothing to do but let coal accumulate. The embargo may have had the effect of hardening Western prices. At any rate, mine run increased 50c. a ton and stopped the downward tendency.

Northeastern Kentucky

Claims of railroad officials that the car supply is about normal and the expression of public officials that prices are too high are disputed and resented by mine owners. Under present conditions it is impossible to produce anything like the tonnage for which there is a market, and hence production costs are high.

Logan and Thacker

Scarcity of equipment continued to handicap Logan mines. The Western market has shown signs of greater activity. With the Western movement stopped for a few days, the Lake movement ceased also. There was more general inquiry for steam coal, however, than there has been, indicating that supplies are running short in some quarters.

Thacker production was only 90,000 tons as against car shortage losses of 150,000 tons, so that Western shipments were materially curtailed. Producers are hardly able to take care of the requirements of their regular customers, much less sell coal on the spot market.

Coke

CONNELLSVILLE

The break in coke prices which began nearly a fortnight ago brings lower prices almost daily, and finds only an occasional purchaser. The market has been under the double pressure of increasing production and of consumers holding off. There is room for at least $2 further decline in coke without the price going below the market price of the coal involved plus the cost of coking, while sometimes coke has sold at less than the price indicated by the usual formula. Coal, furthermore, may decline, and thus furnacemen have good reason for deferring purchases as much as possible.

To a large extent car supply has been the limiting factor in production. At the same time many of the strikers have been quite reluctant to go back to work. At certain plants officials of locals have instructed strikers to return to work while at other plants attempting to resume no such instructions have been given, indicating that the U.M.W. has not formally called off the strike and would be content to see the men stay out as long as they will.

The market is quoted at $8 for furnace coke, this being an asked rather than a bid price, and $10.50@$12.50 for foundry.

The *Courier* reports production during the week ended Oct. 14 at 98,700 tons by the furnace ovens and 42,010 tons by the merchant ovens, a total of 140,710 tons, in increase of 14,360 tons.

UNIONTOWN

Furnace coke this week struck a downward stride, joining coal in the low price movement. A number of factors contributed to the lowering of the coke prices, principal of which is a substantially increased production, which temporarily at least is more than the market can readily absorb. Coupled with that feature is the delivery of British coke upon a basis of approximately $8, Connellsville. It is reported that some consumers who placed orders for foreign coke while the Connellsville market was at the $13 level are now seeking cancellation in order to substitute domestic fuel.

Coal for some time has been described as soft, due to a great extent to resumption of operations at union mines, but the coke market since production was resumed to the extent of establishing one has been strong with an increasingly active demand. That sufficient surplus is now being produced to bear down the market is taken as proof that the union has lost its effectiveness in curtailing production.

BUFFALO

The trade is dull, with some report of price reduction. Jobbers quote 72-hr. foundry at $13@$13.50, 48-hr. furnace at $11.50@$12 and domestic at $11, with $3.28 added for freight.

News Items From Field and Trade

ALABAMA

The following statement relative to the **adjustment of prices on domestic coals produced in Alabama** and shipped to points without the state has been issued by the federal fuel distributor, following a conference of coal operators held in Birmingham: "The prices fixed by the state authorities on domestic coal are as follows: Big seam group, $3.45; Pratt-Jagger, Corona group, $4.45; Cahaba, Black Creek group, $5.20; Montevallo-Climax group, $6. These have been applied as maximum f. o. b. mine prices on coal consumed within the state, but have not been observed on coal moved across the state line. The operators, representing approximately 85 per cent of the entire production, signified their willingness, excepting as to existing contracts, to observe, effective at once, the above schedule of prices on interstate domestic sales."

COLORADO

The following interesting figures from the ninth annual report of the **State Inspector of Coal Mines** of Colorado cover operations in 1921: Number of mines operated, 249; 40 new and old mines opened; 11 mines closed; 5 abandoned; 108 of 249 mines have no railroad connection.

COLORADO PRODUCTION IN 1921

	Net Tons
Sub-bituminous	1,452,264
Semi-bituminous	781,345
Bituminous	6,844,352
Anthracite	63,984
Total	9,141,945
Mined by hand	4,846,446
Mined by machine	4,295,501

COKE OUTPUT, COLORADO, 1921

Coal consumed	695,170
Coke made	369,267

COLORADO PRODUCTION STATISTICS

Miners employed, pick	4,769
Machine	3,356
Total	8,125
Employed in and about mines, (average)	14,164
Average number of man-days worked	164.4
Daily production per man	6.8
Annual production per man	1,125.2
Permissible powder used (lb.)	760,117
Black powder used (lb.)	1,260,955
Dynamite used (lb.)	22,220
Horses and mules	2,009
Gasoline locomotives	9
Steam locomotives	22

ILLINOIS

The mine of the **J. R. McCoy Coal Co.**, Spillertown, has been sold to two men of Herrin, J. C. Lewis and R. W. Hawkins. The new owners will operate the mine under the name of **Lewis & Hawkins.**

The Caloric Coal Co., with headquarters in Marion, has negotiated with the **Southern** Illinois Coal Co. for the purchase of the well-known Lester strip mine on the Burlington at Herrin, scene of the riots last June. The company is incorporated for $40,000 and is cleaning up and repairing the strip mine preparatory to its reopening.

A. S. Austin, of Milwaukee, of the **Kanawha Fuel Co.**, was in Du Quoin last week where he is making preparations to reopen the mine of the **Old Abe Mining Co.**, which is controlled by the Kanawha company. The mine has been idle for over two years.

Fred Hayden has leased the coal rights of A. W. Dix on the farm of Richard Wilds, three miles west of Buda, and preparations are being made for immediate operation.

Work has begun on a new coal mine on the Joseph M. Weir farm east of Walsh. This will be a shaft mine and will be sunk near the railroad and spurs will be run to the mine. Two strip mines have been opened near Walsh, one on the Nick Schuline farm where 6-ft. vein of coal has been found and another on the Walters farm.

Actual work has been started on the new power plant at Grand Tower by the **Central Illinois Public Service Co.** The plant will require about one year for construction and will furnish power to over thirty southern Illinois towns and many towns in Missouri and Kentucky, as well as supply the needs of a large number of coal mines in Illinois. The plant when completed, will be as large as any similar plant in the world.

Reports from all southern Illinois coal fields show an **alarming water shortage.** At many mines arrangements have been made with railroads to supply water in tank cars. At Pana the city has decided to shut off the supply to the mines as a safety move in case of fire.

Milo Smith Ketchum has been appointed as dean of the College of Engineering and director of the Engineering Experiment Station, University of Illinois. He is a member of the American Society of Civil Engineers, the American Railway Engineering Association, the American Society for Testing Materials, the Colorado Scientific Society, the Society for the Promotion of Engineering Education, American Association of University Professors and a fellow of the American Association for the Advancement of Science. He has carried on a consulting practice for 20 years, making a specialty in steel and reinforced concrete bridges, mill and mine structures, and has had considerable experience in valuation work and in giving expert testimony.

INDIANA

The Indianapolis Fuel Committee, appointed by Mayor Shank to co-operate with the federal and state authorities in attempting to regulate the distribution and price of coal, has been revised in its membership again with the appointment of John A. George, president of the Indianapolis Coal Co., and Michael Shea, a former councilman, as members of the committee. Both men accepted the appointment. The mayor said he intended naming a legal advisor to work with the committee and has asked that the committee meet soon.

The Spencer Coal and Mining Co. has been organized at Bedford, for the purpose of doing a general mining business. The company has a capital stock of $10,000, which will be increased later. The directors are Simon H. Crabtree, Edna Crabtree, Henry Spencer and Emma B. Spencer.

Many operators in the "pocket" counties in Indiana along the Southern are preparing to file suits against the railroad in case the investigation, now being conducted, reveals that the railroad company is favoring some mines and allowing others to remain practically idle, according to J. Woolley, of the **Woolley Coal Co.** Statistics now are being compiled by the Southern Indiana Coal Bureau, which will indicate the conditions of the neighborhood mines, according to Mr. Woolley.

The Imperial Coal Co. recently was organized at Terre Haute, with a capital stock of $100,000. The organizers are W. S. McCloud, M. R. McCloud and Louis Clements.

IOWA

Pocahontas County farmers will burn their corn for fuel, it was decided at a large mass meeting held at Laurena recently. The action was taken as elevators in this part of the state cannot handle grain because of the car shortage. Also, it was pointed out, the action would save two freight hauls. Eighty per cent of the farmers in this county cannot pay their taxes, now due, and interest on farm mortgages in many cases is overdue. The only relief the farmers see is to unite in a state-wide movement to burn corn unless a reasonable profit over cost of production can be obtained.

KENTUCKY

A fine program is in preparation for the meeting of the **Kentucky Mining Institute** in Louisville, Nov. 3 and 4. J. M. Dewberry, of the L. & N., is scheduled for a talk on traffic conditions which should prove of especial interest.

The Southern Railroad, which recently settled its strike of shopmen, is improving service to the mines in southeastern Kentucky which it serves. These mines for weeks were completely tied up.

The Miners' Syndicate of America, Pikeville, Pike County, with a capital of $15,000, has been chartered by W. D. Sanders, F. M. Woods and M. M. Martin, all of Pike County.

The Detroit Edison Co. has sued the Mossy Bottom Coal Co., of Pineville, in the United States District Court in Cincinnati for $10,000 upon the grounds that they had failed to live up to a contract made through Eaton Rhodes & Co. as agents for the Kentucky company. It was charged that the Mossy Bottom company was to ship its entire production to the Detroit concern.

On recommendation of Lawson Blankensopp, chief mine inspector, of Kentucky, Gov. E. P. Morrow has appointed **M. S. Blythe**, of Whitco, to succeed **W. H. Hunt**, as assistant state mine inspector for the second district, stationed at Central City.

The Kentucky Gas Coal Co., jobbers, recently incorporated, has located at 321 Starks Bldg., Louisville, and will handle gas, steam and domestic coals, including Kentucky, Indiana, West Virginia or Tennessee fuels. L. P. Young, formerly with the Harlan Coal Co., is president, and L. D. Young, formerly with the Wallins Creek Coal Co., is secretary-treasurer.

MASSACHUSETTS

The Fairmount-Worcester Coal Co., of Worcester, has recently been incorporated under the laws of the state to carry on a coal supply business, etc. The firm has been organized with a capital stock of $50,000, and the officers chosen are: Raymond Tracy, of Millbury, president and treasurer, and Irving W. Mullett, Worcester, vice-president.

The Progressive Coal Co., Inc., Cambridge, has incorporated the business under the laws of the state. The capital stock is $50,000, and the officers chosen are: Mosris Rudnick, president; Joseph F. Rudnick, vice-president, and Benjamin Rudnick, treasurer.

The Rome Wire Co. recently opened a Boston sales office in the Little Bldg.

MINNESOTA

The federal fuel officer has ordered that coal cars which have been left on track for an unreasonable time are to be seized and unloaded without delay. Cases of cars having remained without unloading for five to twenty days are reported.

The new 10-ton bridge of the **Superior Coal & Dock Co.** has been placed in use. The company's dock is at Duluth-Superior harbor and the new bridge places it on a par with the best as far as handling is concerned.

The Minnesota State Fuel Administration has declined an offer of 160 acres of coal lands at Bowman, N. D. It is assumed that the land which has a vein of lignite said to be 60 ft. thick, contains 12,000,000 tons of fuel which would make the price of the coal in the ground around ¼c. a ton.

MISSOURI

The Lincoln Coal & Mining Co. has been organized at Kansas City with a capital stock of $10,000. The company will prospect for coal, oil and other minerals. The shareholders are Howard N. Hanson, John J. Caldwell, A. Scott Myers and Tom C. Hanson.

The property belonging to the **Hanke Coal Co.**, at Huntsville, has been sold at sheriff's sale at the court house in that city to **Norman Johnston** of Huntsville, for $4,000. His was the only bid. It is claimed that the owners spent in the mine and its property the sum of $35 000.

The Tebo Coal Co. has leased a large body of land in the vicinity of Chloe several miles from Lowry City, and will begin operations as soon as a steam shovel can be transported from Pittsburgh, Kan.

The **Callaway County Coal Co.**, which has been operating a steam shovel coal stripping proposition near Carrington, Mo., for the past nine years, is to be dissolved.

One of the chief reasons for the better movement of cars in the St. Louis and Missouri territory is **C. D. Thomas**, in charge of the office at St. Louis recently established by the service department of the I. C. C. Embargoes that tied up loads and empties were investigated and other "kinks" straightened out. The results in the first few weeks were so gratifying that several telegrams were sent to Washington requesting the continuance of the work.

NEW YORK

Maximum prices in New York City for hard coal sold in small quantities to the poor are being put into effect, according to an announcement by **A. S. Learoyd**, district fuel administrator for Greater New York and Long Island. The prices are said to be 10c. per 100 pounds lower than the prevailing prices last year.

Charles S. Allen, in association with Karl Knox Gartner, of the firm of Baker & Baker, has been engaged by the receivers of the **Tidewater Coal Exchange, Inc.**, to present to the Interstate Commerce Commission the matter of refund and remission of demurrage charges amounting to about $990,000 which have been apportioned against members of the Exchange. Mr. Allen will also take up with the debtor and creditor members the matter of settling the outstanding debits and credits.

The Astel Coal Co. has been established in Buffalo, managed by William C. Strassburg, formerly in the coal trade at North Tonawanda, and William E. Schmidt, a former city coal salesman.

NORTH DAKOTA

The Haynes Coal Mining Co., of Haynes, has secured a temporary injunction against the local of the U. M. W., restraining it from interfering with the operation of the mine. The company accepted the Cleveland peace plan, but the local wants $1.50 increase, and continues to picket and guard all approaches to the mine, meet trains and watch all roads. The union is allowed one representative at each established mine entrance to advise would-be employees of the strike and to use peaceful methods to induce them not to work.

North Dakota lignite mines are being opened up wherever the coal seams are readily accessible to railroads and of no great depth. Coal lands are also being bought up for future developments. Production for 1922 will be several times that of a year ago.

OHIO

The Erie Coal & Coke Co., Cleveland, has been incorporated with an authorized capital of $25,000 to mine and sell coal and to do a general jobbing business in coke. Incorporators are H. C. McCoy, H. C. Roberts, J. W. Johnson, E. B. Renenzer and Henry Stern.

Ohio jobbers held a session in Columbus recently in an effort to bring before Fuel Administrator Neal their position in the scheme to regulate prices. Practically all Columbus jobbers attended and those present from out of town were E. W. Astel, Astel Coal Co.; H. S. Fahey, A. & L. Coal Co.; R. S. Bain, Central Coal Mining Co.; P. E. Barrie, Montout & Northwestern Coal Co., and J. L. Deegan, Goff-Kirby Coal Co., all of Cleveland; J. W. Morgan, J. W. Morgan Coal Co., and C. A. Sloane, Jackson Hill Coal Co., Jackson; J. B. Patterman, Blue Ash Coal Co.; Charles R. Moriarity, Cabin Creek Consolidated Coal Co., and J. G. Metcalf, Reliance Coal & Coke Co., all of Cincinnati; Clyde H. Hoyt, C. H. Hoyt Coal Co.; Clint Cole, Cole-Basinger Coal Co., and H. J. Heywood, W. A. Gosline Coal Co., all of Toledo. After a discussion of the position of wholesalers, a committee was named to call on the administrator. Their report was very encouraging as Mr. Neal reported that he was giving the jobbers serious consideration and probably provisions would be made soon for a fair commission on the business they handled. It was believed that the jobbers' position was due more to the lack of cars than to the rulings of the fuel administration.

Coal operators in Ohio are requested by the federal fuel representative to **confine their shipments to short hauls and normal markets.** "There is a tendency, especially on the part of some operators, to ship coal to any point where the highest prices may be obtained," the statement reads. "Shipments to distant destinations delay return of empty cars and impede the car supply. Short hauls, or at least those to normal markets, are of great assistance to the railroads in returning empties.

Representatives of the **New Pocock Coal Co.** and the **Fox & Howells Mining Co.**, both of Massillon, presented facts in regard to their protest against the maximum fair price for coal at the Ohio mines, in a meeting before Fuel Administrator Neal. Each maintained their average cost of production has been $4.93 per ton. On this basis they claim the cost for Stark County of $4.86 is below cost of production and therefore unfair to them.

OKLAHOMA

Nine men are dead as the result of a gas explosion which wrecked mine No. 11 of the **Progressive Coal Co.**, near McCurtain. Rescue squads reached the entombed men shortly after the blast, as the mine is shallow. The wrecked mine was a slope, built through an abandoned strip pit in which coal was found about 500 ft. from the opening. Steps are under way by federal and state officials for a thorough investigation of the cause of the blast.

R. K. Schutt and associates have sunk a shaft on coal leases in Section 2. 18, 27, to a 30-in. vein of coal near Wagoner and are building a sidetrack half a mile to the Iron Mountain Ry., preparatory to mining on a large scale. Besides the shaft mine the company will open a strip pit.

PENNSYLVANIA

At a conference of the directors of the Central Coal Association and the Association of Bituminous Coal Operators of Central Pennsylvania held in Altoona, **Charles O'Neill** of Altoona and **B. M. Clark** of Indiana, president of the latter association, were chosen to represent central Pennsylvania at the joint conference of miners and operators to be held in Chicago on Nov. 14. A special committee composed of **B. M. Clark, R. H. Sommerville, J. Webb Shillingford, S. T. Brown, Rembrandt Peale, C. B. Maxwell, and Charles O'Neill** was appointed to consider the manner or method of representing Central Pennsylvania before the fact finding commission recently appointed by President Harding.

The Dauphin County Court last week heard additional coal tax cases and questions of the right of the commonwealth to tax coal companies for their own fuel used in boilers at the mines and for refuse and culm coal used in the preparation of coal briquets were raised. The appeals were those of the **Scranton Coal Co.**, and the **American Briquet Co.'s** Lykens plant. No decisions will be rendered until settlement of the Heisler appeal before the United States Supreme Court. The briquet company's main contention was that it is not a coal producer but a manufacturer.

As a result of the recent **Bethlehem-Lackawanna Steel Company merger**, the Bethlehem Mines Corporation, which is the mining subsidiary of the Bethlehem Steel Co., took over the Lackawanna coal interests. These consist of the Ellsworth Collieries Co., operating in Washington County, and the Lackawanna Coal & Coke Co., operating at Wehrum. T. R. Johns, manager of coal mines, has established his main office at Heilwood, Indiana County, and made the following appointments: George Lindsay, division superintendent, Heilwood division, Heilwood; H. C. Ford and C. E. Kirker, superintendents, Heilwood division, Heilwood; R. E. Abrams, superintendent, Heilwood division, Wehrum; J. F. Fleming, chief engineer, Heilwood division, Heilwood; S. Steinbach has been retained division superintendent, Preston division, Reedsville, W. Va.; M. B. Mitchell, division superintendent, Marion division, Barrackville, W. Va.; C. F. Welty, superintendent, No. 41 Mine, Marion division, Barrickville, W. Va.; H. R. Nuzum, superintendent, No. 42 Mine, Marion division, Dakota, W. Va.; J. P. McCune, transferred from division superintendent of Marion division, Barrackville, to division superintendent, Ellsworth division, Ellsworth.

TENNESSEE

It is reported at Chattanooga that settlement is near in the bankruptcy litigation involving the **Dayton Coal & Iron Co.**, of Dayton, which has been in the courts for nine years. The proposed settlement, it is reported, calls for full payment of all creditors' claims in Tennessee, and 60 per cent to outside creditors. Whether outside creditors would stand for such a division, when submitted by the federal referee, is a question. At present H. S. Matthews is operating the mines for New York interests.

UTAH

The permit granted the **Salina Canyon Coal Co.** to sell bonds has been revoked by the Securities Commission. The license was suspended some time ago and it is charged by the secretary of the commission that "certain information" desired by him was not filed. The permit gave permission to sell $500,000 worth of bonds.

A Salt Lake City newspaper comments on the fact that while the average wage paid to school teachers is about $4 or $5 a day, foreigners, who cannot even speak our language and have no regard for our laws, can get $15 a day for digging coal in Carbon County. Since the strike settlement many of the men who went out are pleading for their jobs again. In some cases they say they were "crazy," in others that they were "deceived." There is a surplus of labor everywhere in Utah.

WASHINGTON

About 60 per cent of the coal production of the state was represented at the recent conference in Cleveland. **D. F. Buckingham** of Seattle, general manager of the Roslyn Fuel Co., and **John H. Wallace**, also of Seattle, were the delegates of the operators' association, and the union was represented by **W. C. Thompson**, of the U. M. W. The Washington delegates represented virtually none but eastern Washington mines, since nearly all the western Washington mines are now operating on the open-shop plan.

WEST VIRGINIA

The Nuttallburg Mine, in the New River field, owned by Henry Ford, has been closed down and dismantled. Ford has owned the mine for several years, having operated it under a lease since the purchase.

The Fayette & Kanawha Coal Co. has secured a judgment of $50,200 in the circuit court of Kanawha County against the **Lake & Export Coal Corporation** for breach of contract. It was contended by the plaintiff that the defendant company entered into a contract to take over the output of two mines owned by the plaintiff company from June 26, 1920, to June 26, 1921; that the defendant company handled the output until Dec. 10, 1920, and at that time ceased taking the output when the price began to drop. The court allowed the plaintiff damages at the rate of $3 per ton on the estimated output of the two mines from the time the contract was broken until the expiration of the contract.

Judgment was given the **New England Fuel & Transportation Co.** in five out of eleven cases which it had instituted against striking miners for rent, light and heat. One of the judgments was for $300. Those against whom judgment was obtained are now working in other fields.

Boyd M. Smith, of Elkins, has been named as manager of the newly established Fairmont office of Whitely & Foedisch, a coal brokerage concern of New York and Philadelphia. A year or so ago Mr. Smith was in charge of the Fairmont office of Whitney & Kemmerer. Associated with Mr. Smith at Fairmont is **Ed H. Pritt.**

With a view to engaging in the coal business on a small scale, citizens of Mt. Hope have organized the **Greenview Coal Co.**, the headquarters of which will be at Mt. Hope. This company has a capital stock of $15,000.

The Balwood Coal Co. has been organized with a view to operating on a small scale in the New River field, this company being capitalized at $10,000. The principal office will be at Glen Jean. Identified with this concern are: William R. Ballard, of Glen Jean; Clyde G. Wood, Laura B. Wood, of Kilsyth; Blanch Ballard and Edw. Roberts of Mt. Hope.

WYOMING

The Mark Shields Coal Co. is opening what is claimed to be the third largest coal deposit in the world, five miles east of Gillette, on the C. B. & Q. The vein, according to reports, extends to a depth of 95 ft. and covers an area of 800 acres.

The organization meeting of the **Albany County Coal Co.** was held at Laramie recently to complete the incorporation of the company and the election of officers. The company will have a capital stock of $500,000, and will maintain its principal offices at Cheyenne. The officers chosen were as follows: President, J. Alfred Nelson; vice-president, C. P. Scott; secretary-treasurer, V. L. Walker. Directors: A. F. Sprague, C. P. Scott, V. L. Walker, J. Alfred Nelson, W. P. Scott, Ole Gunderson and C. L. Craig.

CANADA

With the object of seeking methods of supplying Canada's coal demands from domestic mines, and with special reference to the situation in Quebec and Ontario, Hon. Charles Stewart, Minister of the Interior, is organizing a **committee of coal and mining experts** under the chairmanship of Dr. Charles Camsell, Deputy Minister of

Mines. This committee will be largely composed of scientists in the government employ. Mr. Stewart, in commenting on the task of combatting possible future coal shortages, was optimistic that some solution would be discovered. One of the problems to be dealt with by the committee will be the possibility of establishing a plant for the coking of Nova Scotia bituminous coal for the extraction of the valuable by-products. It is hoped to produce a coke highly suitable for heating purposes and in this way obviate the necessity of importing high-grade hard coal from the United States. Another question outlined is the feasibility of importing Welsh anthracite into Canada during the summer months and storing it for winter use.

WASHINGTON, D. C.

J. B. Eby has completed work for the U. S. Geological Survey in the Wasatch Plateau coal field in south central Utah.

W. C. Mendenhall, of the U. S. Geological Survey, has returned to Washington after an extended Western trip.

Traffic News

President W. J. Harahan, of the Chesapeake & Ohio, has made the following announcement: "This company has settled with its shopcrafts and the old men are coming back to work as fast as we can take them. We have put no limit on our expense with reference to repairing locomotives and cars, and are already beginning to make some headway. We have placed contracts for repairs to bad-order cars at shops outside of our own covering 4,000 cars. We have made contracts for repairs to 100 engines at outside shops. We have purchased 5,620 freight cars, delivery of which will be started next month. We have also bought for delivery early next year fifty large Mallet locomotives. Notwithstanding these facts, we feel that the situation will not improve rapidly, but it will improve gradually. We are fully alive to the situation and hope to be able to show some accomplishment very soon."

The application of the **Kanawha & Michigan Ry.** to cancel the coal-carrying rates on the Charleston division of the B. & O., between Dundon, W. Va., and Elkins, which was to have been heard on Oct. 19, has been postponed for thirty days.

That the move to attract factories to the coal supply of West Virginia is hampered by rates on coal within the state was the opinion expressed by R. Darden and other **members of the Monogahela Valley** at a meeting held at Mannington. The opinion was expressed during the meeting that although West Virginia was trying to get a lower rate established on intrastate freight, there were certain influences at work in the Pittsburgh district directed toward keeping the rate at its present figure. The whole matter will be brought to the attention of the I. C. C. in New York on Nov. 20, the proposed basis of rate fixing within the state being sponsored by the West Virginia public service commission.

After a week of argument and an effort on the part of counsel for the defendants to prove that they could not secure a fair trial in Brooke County owing to the inflamed state of the public mind, Judge J. B. Sommerville rendered a decision overruling the decision for a change of venue. The 218 union miners, most of them from Avella, Pa., charged with complicity in the attack on the non-union Clifton operation of the **Richland Coal Mining Co.,** on July 17, will have to stand trial in the county where their crime is alleged to have been committed.

Rumors have been in circulation for several weeks in the coal fields of southern West Virginia that **Henry Ford** has been carrying on negotiations for the purchase of the **Wabash and the Virginian railroads.** For several years there has been more or less discussion as to an extension of the Virginian down the Guyandotte River to Huntington. If Ford should acquire the Virginian, it would be possible to connect that road with the D. T. & I. by making the extension and by bridging the Ohio River at Huntington.

One factor connected with the winter coal problem, as it affects consumers in several states and a number of railroads, has been checked by the I. C. C. in ordering the L. & N. not to cancel existing **joint rate schedules from eastern Kentucky, Tennessee and southwestern Virginia** mines to 133 points in Minnesota, South Dakota and Wisconsin. Increases which would result from the proposed cancellation, the Commission held, were not justified. The proposed cancellation already had been suspended to Oct. 15.

A shortage in coal car supply on the L. & N. is gradually being relieved, officials of that road have announced. This statement was accompanied by information showing the steps being taken for that purpose. Between 20 and 25 new coal cars are being delivered daily to the L. & N. by the Cambria Steel Co., Cambria, Pa. Fifty others are en route and by the end of this month most of an order of 2,000 will have been received.

A resumption of operation of the abandoned part of the coal railroad division of the Chicago & Eastern Illinois will begin about Nov. 1. George M. Barnard, general counsel for the **Chicago, Attica & Southern R. R. Co.,** the recently formed corporation which took over the abandoned part, made the announcement.

Reduced freight tariffs on Canadian coal through all points of entry to North Dakota have been received from the **Great Northern Ry.,** as a result of negotiations opened by the state industrial commission. Canadian mines have promised to furnish North Dakota from 500 to 1,500 tons weekly.

The I. C. C. will reopen the Utah Terminal and the Utah Railway case, which involves permission to operate in interstate commerce as well as serve the coal properties in Spring Canyon. The Utah Terminal was denied permission to operate as an interstate carrier some time ago. The Utah Railway has taken over the line, but the commission still withholds its permission. The case is to be heard again at an early date. The I. C. C. has denied the petition of the **Ballard & Thompson R.R.,** southern Utah, to operate as an interstate carrier. The road was constructed in 1911 and has operated chiefly as a subsidiary of the American Fuel Co.

Federal Fuel Control Notes

Amendment No. 1 to Service Order No. 25—The I. C. C. on Oct. 17 ordered that this be amended and supplemented in the following respects: (1) By adding to paragraph 3 thereof an additional proviso as follows: "Provided further, that from and after Oct. 23, 1922, the supply and distribution of open-top cars suitable for the loading and transportation of coal to wagon mines shall be subject to the following rule: Upon any day when any such common carrier by railroad is unable to supply mines upon its line with the required number of open-top cars, such cars shall not be furnished or supplied by it to any mine which customarily does not load or is unable to load such cars with coal within 24 hours from and after the time of placement until all mines upon the line of any such carriers have been fully supplied with such cars." (2) That the proviso in paragraph 5 of said order, which deals with the return of cars, under load other than coal, in the direction of the mine be amended to read: "Provided, that such open-top cars, after the discharge of the coal lading thereof, may be used for the transportation of road and building construction materials, etc., and materials for car and locomotive construction or repair, when the destination of such materials is in the direction of but not beyond the mine or mines to which such open-top cars are destined for coal loading, and when such use will not materially delay or minimize the production and transportation of coal."

General problems affecting the coal-price situation are assigned to **F. R. Wadleigh,** in co-operation with the fuel distributor. Mr. Wadleigh also will give consideration to the matter of anthracite prices and distribution; to export and bunker coal; to Tidewater and New England coal supplies and to individual complaints as to prices charged. Technical questions relating to the use of coal will receive Mr. Wadleigh's attention.

Obituary

William T. Steger, sales manager for the Willis Coal & Mining Co., with headquarters in St. Louis, died recently at his home in that city. He had served for 23 years with this concern.

Phil Gloeckner, 40, for several years engaged in the coal business in Ft. Wayne, Ind., died recently at the home of his brother-in-law at Richmond, Ind., where he was visiting. He is survived by the widow and one daughter.

L. H. Curtis, prominently identified with coal mining in Utah, died in Los Angeles late in September, at the age of 75. Mr. Curtis was vice-president of the Standard Coal Co. and of the Salt Lake & Utah R.R. Co.

Association Activities

Northern West Virginia Coal Operators' Association

Action taken by the representatives of the association at the Cleveland conference, upon which a full report was submitted, was approved at a meeting of the association held at Fairmont on Oct. 13. C. H. Jenkins, vice-president of the Hutchinson Coal Co., who attended the Cleveland conference, was named as the official representative of the association at the Chicago conference which is to be held on Nov. 14.

There was much discussion, during the meeting, of the action of the B. & O. in delaying the regular car loading bulletin until October, regardless of the car shortage now existing. Operators have difficulty in ascertaining just what the car distribution is between regions and each field feels that other fields are being given preference. Under a resolution adopted at the meeting the association will act as a clearing house for the collection of complaints as to car service.

Full compliance with the request of the federal fuel distributor for daily reports was recommended by the adoption of a resolution in which it was pointed out that such reports could be made to show how serious the car shortage was, especially through the use of memorandum notations.

Publications Received

Permissible Explosives, Mining Equipment and Apparatus, Approved Prior to March 15, 1922. By S. P. Howell, L. C. Ilsley, D. J. Parker and A. C. Fieldner. Bureau of Mines, Washington, D. C. Technical paper 307. Pp. 21; 6 x 9 in.; tables.

Trade Standards in the Pump Industry. This is the second edition of this pamphlet gotten out by the Hydraulic Society, and contains some additional tables and explanatory data. Pp. 21; 6 x 9 in.

Tests of Gas Masks and Respirators for Protection from Locomotive Smoke in Railroad Tunnels with Analyses of Tunnel Atmospheres, by A. C. Fieldner, S. H. Katz and S. P. Kinney, Bureau of Mines, Washington, D. C. Technical Paper 292. Pp. 27; 6 x 9 in., illustrated.

Coming Meetings

Kentucky Mining Institute will hold its annual meeting Nov. 3 and 4 at Seelbach Hotel, Louisville, Ky. Secretary, Elizabeth C. Rogers, Lexington, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.